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INSIDE DOPE

By GEORGE F. TAUBENECK

Story of the Week

A forlorn youth plodded wearily into the Y.M.C.A. counsellor's office. "Have I got a problem!" he moaned.

"What seems to be the difficulty?" inquired the sympathetic older man.

"Well, it all started back in my home town of Waukesha," began the young man. "Before I left there, I got engaged to a girl, and bought her an $800 diamond ring."

"What's wrong with that?" asked the counsellor.

"Oh, nothin'," answered the harried youth. "But today I got this letter that says she hocked the ring and gave the money to one of her boy friends. Then he skips out, and leaves her in a family way."

"Yes, yes, continue," prodded the Y.M.C.A.'s "Mr. Anthony."

"She says in the letter that she's gained 125 lbs., and has a very bad case of acne."

"Tsk, tsk," tsked the frowning adviser.

"Besides that, her mother and father and seven brothers and sisters, who all hate me, are going to live with us," deplored the lad.

"What a situation!" agreed the counsellor. "What can I do to help you?"

"You can tell me, sir," earnestly implored the youth, "if February is a good month to get married in."

Spiking a Fallacy

Our seatmate on an air-passage flight to Kansas City folded his copy of *The Nation*.

Obviously he was ready to talk.

And quite as obviously, he was "gunning" for somebody.

As it turned out, that "somebody" was the apotheosis of the mythical corporate "powers" who—the left-wingers allege—control our incomes, our actions, our thoughts, and hopes.

"Why shouldn't the Big Monopolies grant a 25% increase to their working-men?" he demanded, out of a clear sky.

"What's a pittance like that to a mighty corporation which is now reaping the benefits of the tremendously increased technological efficiency stimulated by wartime research?"

"Everybody knows," he continued, "that new processes and new methods born out of war experience have made the average worker 70% more efficient. Why shouldn't the worker share in that gain?"

Wait a Minute, Brother

"Where did you get that 70% figure?" we asked, mildly.

"Why, everybody knows that. Writers for *PM* and *The Nation* have proved it."

That did it. We lost our temper. *PM* writers, indeed!

What have they proved?

When America's converted-to-war industries were forced to turn out strange, extraordinarily high-tolerance items, their beginning efficiency was low, indeed.

In time, they learned how to produce lethal weapons at a greater rate.

And so "labor productivity" statistics improved sharply, according to questionable government figures.

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Wage-Hr. Chief Tells Rulings On Contractors

NEW YORK CITY—The Wage and Hour and Public Contracts Divisions of the U. S. Department of Labor apparently believes that many forms of installation and servicing of household and commercial refrigeration equipment, plus air conditioning, appear to be covered by the Wages & Hours Act, judging from statements made to AIR CONDITIONING & REFRIGERATION NEWS by L. Metcalfe Walling, national administrator of the divisions.

These statements resulted from a story in the Oct. 28 issue of the NEWS reporting that the Detroit branch of the U. S. office had informed a leading Detroit contractor that virtually all his employes were subject to the act and therefore were entitled to back pay for a period of four years based on time-and-a-half for work over 40 hours a week.

At the time, the contractor planned to take this decision to court. Since making its original decision, however, the Detroit Wage-Hour officials decided to study the case further and the status of this particular case now is uncertain. Meanwhile, as part of a change in his operations, this contractor has gone to a 40-hour week.

"Two main grounds for coverage of such installation and servicing work exist under the Divisions' interpretation of the provisions of the act," declares Mr. Walling.

"As one basis for coverage, publicly announced as early as May 15, 1941, in release G-162, the Divisions expressed the view that employes engaged in the maintenance, repair, and reconstruction of premises used in the production of goods for commerce are engaged in a 'process or occupation necessary to the production' of such goods and therefore are within the coverage of the act.

"As you will note in paragraph IIIA of the above release, it is stated that among the operations included is work performed in connection with installing and maintaining refrigerating, air conditioning, and heating systems.

"This established position has been approved by a number of court decisions, including that of the Supreme Court of the United States in the recent case of *Walling* v. *Roland Electrical Co.*, 326 U.S. 657, which held that the sale to and servicing of electrical equipment for industrial firms is an occupation necessary to the production of goods for interstate commerce," states Mr. Walling.

"As the court pointed out in the *Roland Electrical* case, it is not necessary that a particular occupation be indispensable to production, so long as the absence of such activities would 'handicap the production.'

"The Divisions have likewise considered to be within the coverage of the act, employes engaged in the maintenance, repair, and reconstruction of essential instrumentalities of commerce since such activities are so closely related to interstate commerce as to constitute a part thereof.

"Thus, for example, employes engaged in the installation or maintenance of an air conditioning unit in a railroad or bus terminal, in a telephone exchange, or other instrumentality of commerce would be engaged in commerce and therefore within the coverage of the act.

"A second basis for coverage," continues Mr. Walling, "under the Fair Labor Standards Act applicable to the situation in question exists where the installation and servicing is performed pursuant to an interstate contract of sale or while the goods are still in commerce. This basis of coverage is explained in Mr. Hermansen's letter to you."

[Mr. Walling here refers to a letter from Thomas A. Hermansen, manager of the Detroit branch of the

(Concluded on Page 6, Column 1)

Heating, Ventilating Show to Reveal 1947 Products of Over 300 Firms

CLEVELAND—More than 300 exhibitors will display their latest products when the Seventh International Heating & Ventilating Exposition opens its doors at Lakeside Hall here next Monday, Jan. 27, for a five-day showing.

The first since 1940, this exposition is sponsored by the American Society of Heating & Ventilating Engineers, which will hold its fifty-third annual meeting at the Statler hotel here concurrently with the show. In addition to this convention, the thirty-third annual meeting of the National Warm Air Heating & Air Conditioning Association will take place the same week, on Jan. 29 and 30 at the Cleveland hotel.

The exposition is expected to show for the first time many of the new products developed during the war and since. Although the exhibits will be largely confined to heating and winter air conditioning, there will be a fair number showing year-around air conditioning lines and related equipment.

(A complete list of exhibitors and a diagram indicating booth locations appears on pages 14 and 15 of this issue, while detailed descriptions of several exhibitors' display plans are published on page 17.)

Attendance at the exposition will be limited to those having a bona fide interest, such as "those who are concerned with the purchase, installation, use, and sale of heating, ventilating, and air conditioning equipment," states the exposition management. All visitors will have to register.

Exposition Hours
Mon., Jan. 27—2 p.m. to 10:30 p.m.
Tues., Jan. 28—12 noon to 10:30 p.m.
Wed., Jan. 29—12 noon to 10:30 p.m.
Thurs., Jan. 30—12 noon to 10:30 p.m.
Fri., Jan. 31—12 noon to 6 p.m.

To facilitate registration, visitors are advised to obtain and fill out "advance registration cards," which exhibitors have available. Readers of AIR CONDITIONING & REFRIGERATION NEWS may obtain these cards by writing to the NEWS.

A broad program of events has been mapped out for the meetings of

(Concluded on Back Page, Column 1)

Appliance Interest Cited as Need for Dept. Store Heads

By George Hanning

NEW YORK CITY—If appliance departments in large department stores are not to lose to the tough competition from specialty stores, chain stores, furniture stores, and others, when the buyers' market sets in, top store executives must take an active interest in that department.

That point was cited as a prime factor in building maximum volume in major appliances and radios by several speakers at a session of the National Retail Dry Goods Association convention at Hotel Pennsylvania here last Thursday.

"Any department store desiring to can have a successful, profitable electric refrigerator sales operation," declared Dan A. Packard, household sales manager for Kelvinator, in a talk before the appliance session.

Ten important fundamentals are necessary for this success, he explained. These include: (1) senior executive interest, (2) the right kind of sales management, (3) the proper location of the department and proper displays of the merchandise, (4) steady promotion and

(Concluded on Page 4, Column 3)

Limit Is Raised for Non-Residential Type of Building

WASHINGTON, D. C.—The Civilian Production Administration is raising to $50,000,000 its weekly rate of approvals for non-residential building, Major General Philip B. Fleming, Temporary Controls Administrator, announced Jan. 10.

"This action is made necessary in part by increased costs of construction during 1946, and because without the change it would not be possible in many instances to approve the added facilities which are required to furnish vital community

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'Laundromat' Price Increase Announced

PITTSBURGH — Higher manufacturing costs are causing some Westinghouse appliances to rise in price.

Latest advance occurred in the Laundromat, which formerly sold for $241.50. It now sells for $269.95. Earlier Westinghouse had boosted prices on three models of electric ranges. The one formerly $264, now sells at $298.95; the second formerly $174.50, now $199.95; and the third formerly $137.75, now $147.95.

Congress, Reserve Board Discuss Easier Terms

WASHINGTON, D. C.—An indication that The Federal Reserve Board may later ease credit restrictions in the field of consumer durable goods was given here last week.

In a letter to Rep. Philip J. Philbin (Mass. Democrat) S. R. Carpenter, secretary of the Board, stated that he and his associates are studying a proposal to key Regulation W to

(Concluded on Page 4, Column 4)

Air Conditioning '46 Unit Sales Lagged Badly

DETROIT—First returns are in on shipments of air conditioning and commercial refrigeration equipment for part of the year 1946, and from what can be determined from them, it is apparent that the industry fell rather short of the performance that was expected of it—but through no fault of its own.

The report is the Bureau of Census figures on air conditioning and commercial refrigeration shipments for the first six months of 1946. (A complete breakdown of the report is published on pages 22-25 of this issue). There seems to be no way of telling how complete the Bureau's report on industry shipments may be. The government agency says 71 manufacturers reported, and thinks that the report is quite complete. Individual manufacturers are divided in their opinion on this subject.

In one category the industry's performance—according to the Census figures—was rather startlingly good. That was in the case of condensing units, the report showing that 303,048 condensing units being shipped in the first half of 1946. (The question here is whether or not this may have included some units produced by independent condensing unit makers that went into household refrigerators).

Taking this figure at its face value, however, puts the manufacturer of condensing units in the light of producing and selling at a rate predicted for them in the first postwar year.

Here are some comparisons with both prewar performance and postwar predictions:

Census Report for 6 Mos. of 1946	303,048
Entire Year, 1940	349,049
Chrysler Airtemp Survey For First Full Postwar Year	529,443
War Production Board Survey For First Postwar Year	998,000

The Census report on store and room-type air conditioners, which may be more accurate in that there would be no factors likely to distort the figures, show how lack of material and labor troubles tended to hold back production.

Here are the figures and comparisons on store conditioners:

Census Report for 6 Mos. of 1946	7,469
Entire Year, 1941	6,043
Chrysler Airtemp Survey For First Full Postwar Year*	24,500
WPB Survey For First Postwar Year's Requirements	23,814

*All 1½ hp. and larger packaged conditioners, for both household and residential use.

On room-type air conditioners (presumably 1 hp. and less, although this is not specified) performance was the saddest.

Here are the figures:

Census Report for 6 Mos. of 1946	2,486
Entire Year, 1941	30,000
Chrysler Airtemp Survey For First Full Postwar Year	55,000

David Fiske Resigns As ASRE Secretary

NEW YORK CITY — David L. Fiske has resigned as national secretary of the American Society of Refrigerating Engineers, the resignation being effective immediately.

Mr. Fiske had been secretary of the Society since 1926. No announcement was made of his future plans, although it is believed that he will stay in the industry. The A.S.R.E. Council will select the new secretary.

United Association to Recognize N.A.R.C. as An Employers' Group

WASHINGTON, D. C.—The meeting Jan. 6-7 at the Statler hotel here between the United Association of Journeymen and Apprentices of the Plumbing and Pipefitting Industry of the United States and Canada, and the National Association of Refrigeration Contractors, wherein problems of mutual interest pertaining to the refrigeration industry were discussed, resulted in the United Association recognizing the N.A.R.C. as a national association representing the refrigeration contractors.

It was agreed, according to an "official" report of the conference, that the two associations will work closely together on all matters of mutual interest when legally possible. These matters will include the training of apprentices and journeymen employed in the refrigeration industry.

Future meetings will be held by representatives of both organizations for the purpose of making a further

(Concluded on Page 4, Column 5)

$1,000,000 Worth of Refrigeration, Air Conditioning Set for Omaha Hotels

OMAHA, Neb.—Local hotels are planning air conditioning projects and addition of refrigeration equipment to food service departments in 1947 that will total well over $1,000,000, according to C. E. Heaney, secretary of the Omaha Hotel Association.

One of the largest projects is that of the Hill Hotel, managed by Sam Josephson, which recently purchased an adjoining building and is rebuilding the structure to house the hotel kitchen. It will have terra cotta walls, quarry tile floors, and stainless steel equipment. Considerable new refrigeration equipment, including walk-in boxes, will be installed for meats, poultry, dairy products, and vegetables.

New kitchen refrigeration units to be installed at the Omaha Athletic Club by J. C. Allgaier, Sr., to cost $15,000. Extension of air conditioning also is being planned.

F. X. Cahill, manager of the Paxton Hotel, will install new air conditioning equipment in the hotel coffee shop. A new air conditioning plant also is on the agenda of improvements for the Conant-Sanford Hotel, according to Harley Conant.

New bar equipment including refrigeration units is being installed in the redecorated Elks Club Hotel managed by Zola Lang.

One hundred rooms will be modernized at the Castle Hotel, according to Manager H. A. Papineau, and the coffee shop enlarged, along with addition of a new bar room. All public space will be air conditioned.

The Blackstone Hotel will include additional air conditioning, relocation, and refurnishing of public space and modernization of guest rooms, in a five-year improvement program. The coffee shop and bar are being air conditioned at the Lee Hotel, in addition to a general reconditioning program.

Recent completion of its new, air conditioned inn capped a five-year rehabilitation program at the Regis Hotel.

4 Pappas Bros. Establish New Refrigeration Firm In Houston

HOUSTON, Tex.—The Pappas Refrigerating Co. has been established here at 602 Louisiana by four Houston brothers.

The brothers are James H. Pappas, who before the war was with the Zero Plate Commercial Refrigerating Co.; Tom Pappas, George Pappas, and Pete Pappas. Three of the brothers served in the Army Air Forces and the other in the infantry.

Scott to Sell on 2 Levels

PATERSON, N. J.—Charles E. Walker has filed trade name to deal as The Walker-Scott Co., 601 Main St. The company will sell air conditioning, refrigerators, and general appliances at wholesale and retail.

American Thermal Will Move Into New Detroit Plant Soon

DETROIT—American Thermal Industries, Inc., manufacturer of Ameri-therm and Amtico package air conditioners, is preparing to move into its new plant at 440 Illinois Ave. here, in the near future, company officials have announced.

The new plant, with its 20,000 sq. ft. of floor space, will house continuous production lines for degreasing, rustproofing, painting, and finishing air conditioning units.

The greatly increased space over present facilities at 2501 Bellevue Ave. here, will permit installations of the most modern equipment for the fabrication, finishing, and testing of refrigeration, heating, and ventilating equipment, according to a company spokesman.

The company is now producing Ameri-therm air conditioners of 3 to 15 tons capacity at the rate of 15 per day, it is said. Units with 3 to 7½-tons capacity are now available for delivery.

With its expanded facilities, American Thermal Industries is prepared to take on additional dealers, distributors, and manufacturers' agents, the company spokesman said.

Eastern distributor of the company's products is Controld-Temp Equipment Sales Co. of New York City. Melvin Pine & Co. handles the firm's exports.

The company is said to be geared up to produce in excess of 15 package air conditioners per day.

Even Politicians Will Work Longer

Air Conditioning Enables Congressmen To Do a Better Job During Hot Sessions

WASHINGTON, D. C.—Announcement recently that the Senate and House chambers of the United States Capitol are to be completely modernized prior to January, 1948, with new ceilings and new systems of lighting, acoustic equipment, and air conditioning, brings into focus again the effect of improved working conditions on legislative activity in Washington.

The Capitol has now been completely air conditioned for the last eight years, or since 1938, and it is regarded as more than a coincidence that Congress has carried its sessions into August, or later months, every year since 1938, although the traditional adjournment date in earlier times was not later than June, when the heat wave usually settles over Washington.

Some attribute the long sessions of the last eight years to international complications and war. Others feel they have been due partly to the recent legislative tendency to pass emergency legislation of limited tenure, which must be studied periodically and either reenacted or abandoned.

Still others see a much simpler explanation, which is that industrial and scientific advances have come to the aid of forensic discourse. It is that air conditioning as introduced into the Senate and House chambers, the Congressional office buildings, and finally the entire Capitol, has made the Capitol and its environs habitable during the summer months.

Congress can remain on the job in comparative comfort, and consequently does. Eggs may be fried in accordance with custom on the sidewalks outside, but the humidity is squeezed from the inside atmosphere and the sun's heat is not permitted to add to the warmth of the debates.

The fact is that in the 157 years since the American Congress first convened, it has been in session more than 300 days in only 15 of those 157 years, and among these 15 are the last six completed years, the period from 1940 to 1945, inclusive. One Congress, the 76th, taking advantage of Leap Year, managed to extend a session through 366 days, a record that may never be duplicated. It remained in session from Jan. 3, 1940 to Jan. 3, 1941, although only 363 days of the session were in a single year of 1940.

Contrasted with the last six years, each with Congress on the job for a longer period than 300 days, are the 150 years between the first session in New York City, March 4, 1789, and 1939, when the late summer sessions became the established pattern. In this 150 year period, there were only nine years in which Congress was in session more than 300 days.

Possibly the advent of air conditioning is not an important factor. But such a statement lacks persuasiveness, when one looks at the record of the sessions since it was installed. Some of the representatives of the air conditioning industry think it is an improvement in working conditions which has made feasible the continuous functioning of Congress during the recent critical times.

Older Washington residents recall how the arrival of summer was announced in the Senate by the appearance of big palm leaf fans, and bowls of lemonade in the cloakrooms, and by admonitions from Senators Aldrich, Allison, and Hale, who were guiding most of the legislation of an earlier generation, that the Senators would have to attend diligently to the business at hand in order that Congress could get away.

Various efforts were made in earlier days at cooling and circulating the air in the Senate and House chambers. Electric fans were placed overhead, but correspondents in the press galleries objected that they blew the note paper and made reporting difficult. Subsequently, air intakes with suction fans were established outside of the Capitol building and the air was introduced through floor gratings in House and Senate.

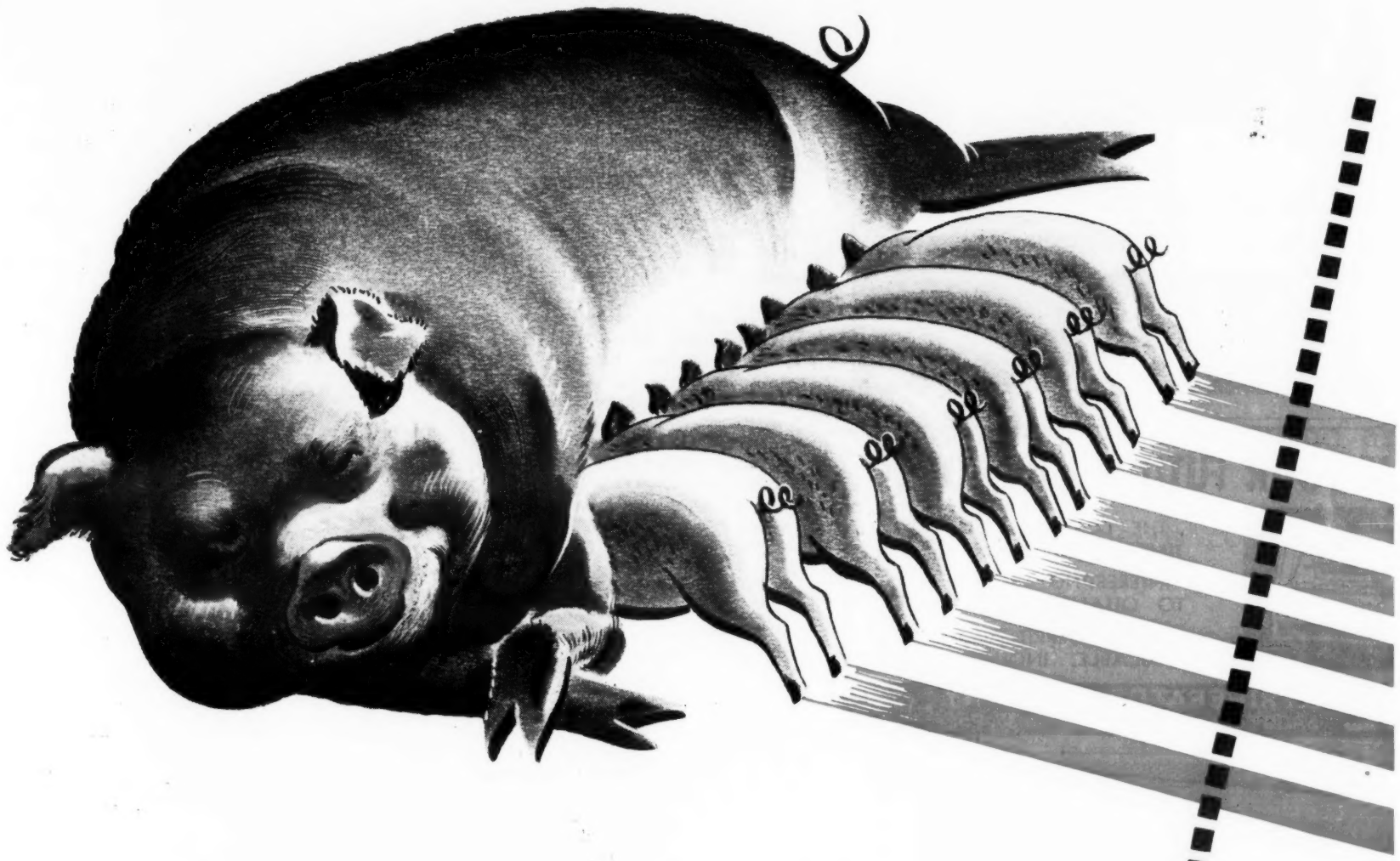
Exhaust fans drew the air out through the ceilings. While this gave fresh air, it did not improve the temperature or humidity of the outside atmosphere and was not regarded as a substitute for the palm leaf fan. At the White House, President Taft tried to solve the problem by putting an electric fan behind a cake of ice in the hot air duct, a recourse used also at times for the House chamber. Many thought it added to the stickiness of the atmosphere.

Air conditioning was begun in the House chamber in 1929 and the Capitol project was finished nine years later, making the Capitol undoubtedly the largest completely air conditioned building in the world. One of the early estimates, made by Dr. George Calver, the Capitol physician, was that operation of the new air conditioning system in the Capitol and the three office buildings had reduced colds among the members by one half.

Whether or not the longer sessions of Congress are attributable to technological advances in indoor climate control, it is certain that air conditioning has enabled the national legislators to function efficiently and without the complaints which always attended the sessions that extended beyond early June.

Such advantages as have come from air conditioning at the Capitol have now been extended to numerous other departments in Washington.

It is anticipated by representatives of the air conditioning industry that eventually most public buildings of the country will be air conditioned in the interests of the health and efficiency of public officials and employes.



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Dept. Stores--

(Concluded from Page 1, Column 3)

advertising, (5) concentration of effort,

(6) The right kind of sales organization, (7) creative selling, (8) adequate and competitive sales financing support, (9) adequate service facilities, and (10) activity in the replacement market.

Of these fundamentals, Mr. Packard placed considerable emphasis on the replacement factor, pointing out to the department store men that "the day is now, or will soon be, past when you can expect to do a sizeable refrigeration volume without dealing with a replacement buyer."

Predicting that the refrigerator market for the next four years will total some 20,000,000 units, he expects 12,000,000 will be replacement buyers and 8,000,000 first-time buyers.

"What will become of the 12,000,000 replacement refrigerators? Just guessing, we feel that 4,000,000 of these may be reconditioned and resold. Another million may be kept by their present owners as second refrigerators. Allowing 500,000 as a reasonable nation-wide inventory of used refrigerators, this leaves 6,500,000 used refrigerators to be disposed of either by the owner or the dealer," said Mr. Packard.

'KEEP THE OLD UNIT'

"The more used refrigerators you fix up and resell the fewer new refrigerators you are going to be able to sell," he cautioned, adding that "the more you can encourage owners to keep their old refrigerator as a second unit by showing that it has more value to them in this manner than it does on the trade-in market, the fewer old refrigerators you will have to pass through your inventory. The important thing—don't let used refrigerators pile up in your warehouses."

Recounting the experience of the automotive field with used cars, Mr. Packard told the NRDGA members the conclusion reached by one automobile expert: "The real lesson to be learned from the experience of the motor industry is that the trade-in operation is a basic part of the business and that it should be treated as such and not as a sporadic ailment that can be cured by liberal doses of panaceas."

John M. Otter, sales manager of the radio and television division of Philco, outlined the benefits to department stores who sell national "brand" products. He asserted that brand products give prestige to a department store and draw customers through its stores. He declared that brand products have to be quality products and the manufacturers have to stand behind them.

The time is rapidly coming, he added, when time payments are going to be a big factor in appliance selling. He saw no reason why department stores should not offer freer terms to meet the terms offered by furniture stores and others when the buyers' market sets in.

Herman C. Price, vice president of Kalamazoo Stove & Furniture Co. and formerly manager of the major appliance division of Sears, Roebuck & Co., promoted the case for "private brand" appliances. He asserted that in addition to controlled distribution and concentrated purchasing power, department stores need "creative specification buying" to "meet the standards set by large chain stores in appliance merchandising." The latter factor means that the merchandiser actually dominates the manufacturing branch, "supervising production design, engineering, costs, and factory layout."

Easier Terms--

(Concluded from Page 1, Column 3)

meet fluctuations in supply and demand.

[NEWS readers will recall that changes made in the Regulation last December released most types of goods from its provisions with the exception of durables, such as refrigerators and automobiles.]

The flood of complaints from manufacturers of durable goods following this move prompted Rep. Philbin to inquire of the Board whether Regulation W might not be liberalized. As suggested by the Congressman, the plan called for a down payment of 10% and the balance in instalment payments over a 24-month period.

Here in part is the Board's recent reply to Rep. Philbin's letter:

". . . As you know, the potential demand for durables . . . has been very large, while supplies from current production . . . have been inadequate. It has been one of the principal objects of the regulation to contribute to a better balance in supply and demand by keeping effective demand under some restraint. . . .

"We cannot say at this time when terms such as those mentioned in your letter (10% down and 24 months to pay the balance) would be appropriate. In varying the terms of the regulation, the Board would be influenced by a number of factors which would include the general level of economic activity, the distribution of activity as between durables and other things, the price level and its movement, the volume of credit, and the rate and direction of movement in that volume, public holdings of liquid assets, and other similar matters."

Building Limit--

(Concluded from Page 1, Column 3)

needs in connection with new housing developments," General Fleming said.

"These changes are being made only after thorough discussion with all other government agencies involved and, in view of the improved building materials supply, will have little or no impact on housing construction. There will be no other relaxation of the limitations on construction embodied in Veterans' Housing Program Order 1 (VHP-1) at this time, and authorizations must be obtained under the order just as before," he said.

To Recognize NARC--

(Concluded from Page 1, Column 5)

study of conditions in the industry in order to make recommendations that will create better labor relations.

Present at the Jan. 6-7 meeting representing the N.A.R.C. were:

Warren W. Farr, Cleveland, president; Ed. S. Wright, Youngstown, first vice president; Raymond Shock, Detroit, co-chairman, Labor Relations Committee; Robert Weston, Pittsburgh, member, Labor Relations Committee; Lee Quinn, Cincinnati, member, Labor Relations Committee.

Representing the United Association were: Martin P. Durkin, general president; Robert F. Lynch, Jersey City, N. J., labor relations committee member; John J. McCartin, Washington, D. C., general organizer; J. W. Harbaugh, Washington, D. C., special representative; C. F. Voss, Washington, D. C., special representative.

Worthington to Quote On Firm Price Basis

HARRISON, N. J. — Products of Worthington Pump & Machinery Corp. here, with a few exceptions, have been placed on a firm price basis, Clarence A. Searle, president, has announced.

This means, according to Mr. Searle, that prices quoted when an order is placed will not be subsequently increased.

Exceptions to this policy are made on major purchased components, such as motors and other electrical equipment, where Worthington will quote similar price protection as is required by its supplier, Mr. Searle said.

Two subsidiaries, especially dependent upon copper and steel plate, will not follow the firm price policy until they can procure their requirements with reasonable assurance of no additional cost increases, he added.

Westinghouse Conditioning Line Is Taken on by Barker, Goldman & Lubin

SPRINGFIELD, Ill. — Barker, Goldman & Lubin Co., lumber retailers, 300 North Ninth St., is now offering a complete Westinghouse air conditioning service.

Heading the air conditioning department is Herschel A. Stults as manager. Mr. Stults is a licensed engineer.

Edward L. Pruitt is the manager of the heating and sheet metal department.

The company lists the following projects underway and projects recently completed: St. Nicholas Hotel, Kay Jewelry Co., Allis-Chalmers Mfg. Co., S. A. Barker Co., Mill Tavern, Paul Tick Liquor Co., Illinois Foundry, and the Legislative Chambers, State of Illinois.

Crown Refrigerator Co. Buys Patterns, Patents Of Bilt-Rite Products

METUCHEN, N. J.—Crown Refrigerator Corp., manufacturer of home and farm freezers and commercial refrigeration here, has purchased all patterns and patents of the Bilt-Rite Refrigeration Products Corp., H. Green, treasurer announced recently.

Packer, Ice Cream Firm Adding Refrigeration

OMAHA, Neb. — Two commercial refrigeration installations are getting underway in Nebraska, the largest being that of the Union Packing Co. of Omaha which was capitalized recently at $100,000, with Carl Frohm as president; Edward Frohm, vice president; and Harold Siegel, secretary-treasurer. At Holdrege, the Holdrege Ice Cream Co. has announced plans to erect a $9,200 building for the manufacture of ice cream.

The Omaha corporation is building a packing plant at 4501 S. 36th St., with complete cold storage facilities, and expects to be in operation this coming April. Officers of the corporation now are engaged in the wholesale distribution of meat in Omaha.

Water Cooler Standards Are Effective Feb. 1

WASHINGTON, D. C.—New commercial standards covering the production of self-contained mechanically refrigerated drinking water coolers will go into effect Feb. 1, announces F. E. Powell of the National Bureau of Standards, U. S. Department of Commerce.

Originally it was planned to become effective six months after the official end of hostilities, but the water cooler industry recently informed the Commerce department that it wished the new standards (designated as CS127-45) to apply as early as possible to 1947 production of the coolers, explained Mr. Powell.

Trane Air Conditioning Class Nears Completion

LA CROSSE, Wis. — Trane Co. here, manufacturer of heating, cooling, and air conditioning equipment, has just announced that its first postwar student class for engineers is nearing completion.

A six-month class for graduate engineers, designed to give the students a knowledge of the Trane products and how they can be used, the course started in July, 1946.

At the same time the company announces that plans are being laid to expand facilities for future classes.

3-Ton Packaged Unit Assures Weaver Constant Conditions for Testing Rug and Carpet Fabrics

CARLISLE, Pa. — To maintain standard atmospheric conditions necessary in fabric testing so that conditions of each test are duplicated from day to day, C. H. Masland & Sons, weavers of rugs and carpets here, employs a Chrysler Airtemp model 3-SCD packaged air conditioning unit, according to C. H. Masland II, vice president.

The conditioner is located just outside the standard conditioning room, where the tests are conducted, Mr. Masland says. It maintains a constant 75° F. dry bulb temperature and 65% relative humidity, he adds.

The standard conditioning room is said to be approximately 33 x 18 x 9½ ft. Well insulated against heat leakage, wall construction consists of 4 in. of 100% fire clay tile, a ½ in. air space, and 3 in. of foam glass insulation. The ceiling consists of ½ in. of transite, 3 in. of foam glass insulation, a 3 in. air space, and 3 in. of concrete. The floor is 5 in. of concrete laid on the ground.

Conditioned air is supplied to the room through ceiling ductwork and two diffusers. Return air comes to the air conditioner through a grille in the wall.

Wage-Hour Law as Applied To Contractor--

(Concluded from Page 1)

wage and hours divisions, which was published in the Oct. 28 issue of the NEWS. This opinion stated, essentially, that where goods originated out of state, any servicing performed on them during the warranty period set up by the out-of-state manufacturer would be covered by the act.]

"The position expressed in this letter is not a new position, as suggested in the article in question, it having been set forth in a legal field letter issued April 20, 1942, for the use of the Divisions' personnel. The views therein expressed were subsequently affirmed in two opinions which were released to the labor law services in 1942 for public circulation. (See *5 Wage Hour Reporter,* pp. 553 and 789.)

"The only modification in this position," explains Mr. Walling, "was that made necessary by the Supreme Court's decision of Jan. 18, 1942, in *Walling* v. *Jacksonville Paper Co.,* 317 U.S. 564. Thus, you will note Mr. Hermansen's letter, paraphrasing the views expressed in 1942, states that coverage will exist where the employe is installing equipment sold 'after being received directly from other states.'

"Following the principles of the *Jacksonville* decision, where the goods were not sold pursuant to an interstate contract of sale and where the sole basis for coverage is that the goods were installed after being received from another state, the Divisions would not regard coverage to exist unless there was a 'practical continuity of movement' of the goods.

"The article in question suggests that the views expressed in Mr. Hermansen's letter constitute a reversal of an opinion given two years ago wherein it was stated that installation and service work is covered in a factory producing for interstate commerce.

[Here Mr. Walling refers to the statement of a Detroit attorney in the Oct. 28 issue of the NEWS that two years ago "it was decided by the wage-hour division, at least in Detroit, that the *only* refrigeration installation and service work covered by the act was that performed in an establishment obviously engaged in interstate commerce, such as a large automobile factory."]

"I am not sure I know the particular opinion you have in mind as being issued two years ago," admits Mr. Walling. "However, there is no inconsistency between the two opinions, since they involve different bases of coverage.

"The basis of coverage in the opinion which you state was given two years ago is that expressed in paragraph IIIA of release G-162, explained above. The basis of coverage in Mr. Hermansen's letter is that set forth in the opinion of April, 1942.

"That there is no inconsistency between these two opinions is clear from the earlier opinion on which Mr. Hermansen's letter was based," avers Mr. Walling. "After explaining the possibilities of coverage where an employe is installing or servicing equipment pursuant to an interstate contract of sale or where the equipment has been received from another state, the earlier opinion continues (this portion was not referred to in Mr. Hermansen's letter) as follows:

" 'Likewise, an employe would be covered if his servicing operations were properly to be regarded as the maintenance or repair of an essential instrumentality of commerce, or of buildings or machinery used to produce goods for commerce. . . .'

"There is also a reference in the article to a distinction between household work and commercial work, with a suggestion that the former is not within the coverage of the act," continues Mr. Walling.

"Ordinarily, installation or servicing of equipment for firms engaged in the production of goods for interstate commerce would be within the coverage of the act on the ground that such work is necessary to the production of goods for interstate commerce.

"However, it does not necessarily follow that household installations or servicing is not within the coverage of the act," he emphasizes. "As pointed out above, such work may be covered when performed pursuant to an interstate contract of sale. Such work may likewise be covered where the goods are still 'in commerce,' within the meaning of the *Jacksonville* case.

"In discussing the exemption from the act's minimum wage and overtime requirements for retail and service establishments under section 13(a)(2), the statement is made that 'employes working on household refrigeration service are exempt from the act,' adds Mr. Walling.

[Section 13(a)(2) of the Fair Labor Standards Act is included under the heading "Exemptions" and reads as follows: "any employe engaged in any retail or service establishment the greater part of whose selling or servicing is in intrastate commerce."]

"This statement is not entirely accurate. The 13(a)(2) exemption is primarily an *establishment* exemption. Thus, if a particular establishment does not qualify for the exemption because it performs a substantial amount of non-retail servicing, *none* of the employes in the establishment would qualify for the exemption.

"Consequently, if a particular employe of such an establishment performed *some covered work* during a particular workweek, he would be entitled to the benefits of the act even though most of his time was devoted to household refrigeration work.

"It should also be noted that the section 13(a)(2) exemption is applicable only to employes 'engaged in' a retail or service establishment. Accordingly, even though an establishment may be considered a retail or service establishment, within the meaning of the exemption, unless a particular employe regularly performs *some* work *in* the establishment he would not be exempt.

"Of course," states Mr. Walling, "the fact that an employe is not exempt under section 13(a)(2) does not necessarily mean that the act's minimum wage and overtime provisions are applicable to him, since the question of exemption has to be considered only where an employe is otherwise performing work which is within the coverage of the act.

"In the last column of the article, third paragraph from the end, there is a quotation from . . . the National Association of Refrigeration Contractors to the effect that the Divisions may have gone 'rather far afield' in interpreting the act with respect to 'service establishments whose business is mostly commercial in nature, mostly intrastate, and for the most part firms whose business is intrastate.'

"In this connection," points out Mr. Walling, "it may interest you to know that the Supreme Court of the United States in *Walling* v. *Roland Electrical Co.,* referred to above, has held that an establishment which is mainly engaged in performing work for industrial and commercial firms is not the type of establishment which Congress intended to exempt under section 13(a)(2)."

How Carbon Panels Can Be Used to Improve 'Ventilation' with Unit Air Conditioners

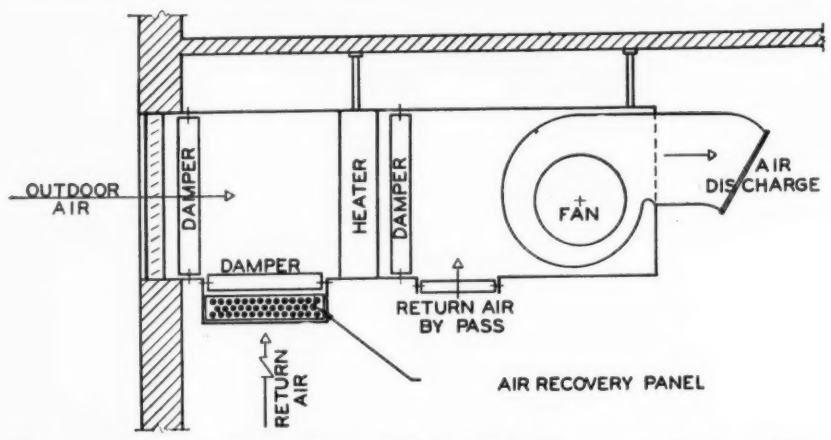
By Henry Sleik, Vice President, W. B. Connor Engineering Corp.

Insufficient fresh air ventilation, high outdoor air requirements, and inaccessibility of outdoor air, frequent handicaps of unitary store-type air conditioners, can often be overcome through the application of activated carbon air recovery. Present crowded conditions usually mean that the design loads are far exceeded and even in instances where greater capacity is available the remoteness of the outside air supply requires extensive and costly ductwork.

Then again, it is sometimes physically impossible to gain access to a source of fresh pure air. These are all conditions that are readily remedied by activated carbon air recovery—the conversion of recirculated indoor air to its original freshness.

Proper ventilation may be described as the volume of fresh, clean air necessary to maintain an agreeable and odor-free atmosphere within a conditioned space. A popular fallacy is the belief that oxygen imparts freshness to air and that large volumes of air are needed to supply such oxygen.

Stale, stuffy air is caused not by lack of oxygen but by odors—just plain smells that originate from occupants and their habits (body, respiratory, tobacco, and cosmetic emanations), and from food and beverages being prepared and served.



How an activated carbon panel may be applied to a unit heater with a housed-type fan is shown above.

The minimum outside air mandatory in any air conditioning system, in other words, that required merely to pressurize the conditioned zone against infiltration, is invariably more than ample for adequate oxygen replenishment.

It has, in fact, long been established that in any above-ground structure, regardless of construction or nature of occupancy, adequate oxygen supply is insured through unadvoidable outdoor air infiltration or from the outdoor air mechanically supplied to counteract infiltration. This minimum air volume is not, however, sufficient to dilute the odors and vaporous impurities which usually accumulate in occupied areas.

It is for this reason that ventilation generally demands many times the air volume required merely for oxygen replenishment. Since this dilution function requires only *fresh* not *new* air, it can be obtained through the purification of recirculated air. And as recirculated air is already at the desired room temperature and humidity, its conversion to fresh air eliminates and thus *saves* the conditioning required by using new outdoor air.

Ventilation of fresh air requirements vary with the nature and function of the space, the type and number of its occupants, their habits and activity, in short, with the rate and degree of odor generation. The ventilation requirement for a crowded night club will, of necessity, be relatively greater than for a sparsely tenanted office.

Space per occupant is a vital factor in the consideration of proper ventilation. Table 1 indicates the recommended volumes of fresh air per person for various types of space and density of occupancy.

While the number of occupants and their metabolism is, of course, taken into account by the air conditioning engineer in his computation of heat loads, the effect of space per occupant upon the ventilation factor is not always appreciated.

The concentration of odors in the atmosphere surrounding the occupant therefore varies inversely with the volume of the space occupied. This means that in order to maintain as favorable an atmospheric quality in a densely occupied area as in a sparsely occupied one, the odor dilution rate must be increased in proportion to the reduction of the space per occupant.

These recommended fresh air volumes, although the result of experience, are not generally provided, which accounts for the poor air quality in many otherwise well-designed air conditioning systems. Sometimes, as in the case of railway cars and airplanes, equipment space, weight, and power limitations compel compromise rather than ideal ventilation standards. More often, however, cost is the only barrier to adequate ventilation. The application of activated carbon air recovery overcomes this obstacle.

The solution of the problem of improving air quality in railroad cars provides an apt illustration of overcoming the condition of insufficient fresh air ventilation. A railroad train duplicates, in a concentrated way, practically every condition of human environment. As each car must carry its own individual system, a railroad train is, in effect, a series of unitary systems, on an average of 7½ ton capacity.

The ventilation problem of the average train is complicated by the abnormally dense occupancy and corresponding high concentration of accumulated odors. Even industrial odors are encountered because the outdoor air intake picks up oil and combustion fumes, and other contaminants. Sometimes in club or lounge cars more than 50 persons, smoking and drinking, gather in a car designed for a normal occupancy of 22 to 24 passengers.

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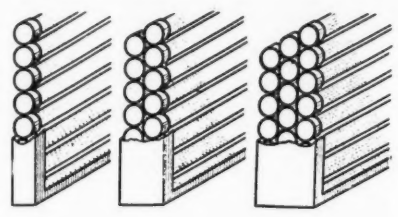
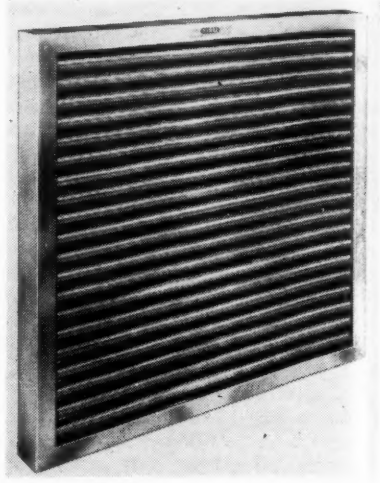
Carbon Panels as Designed for Conditioners





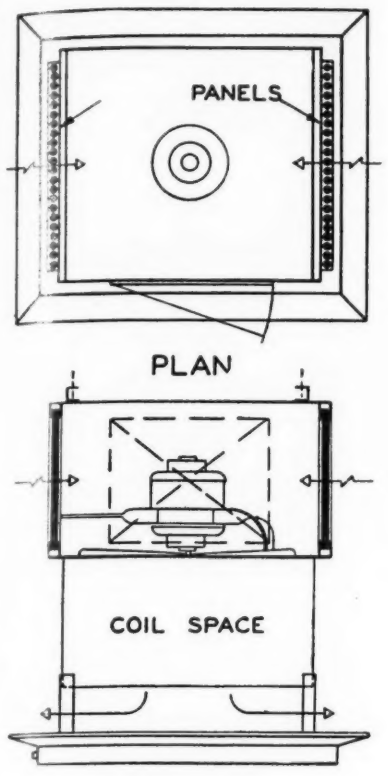
In the panel shown at right long, perforated metal tubes contain activated carbon which removes objectionable odors from air, thus restoring the air to its original "freshness," according to the manufacturer. Panels are available with one, two, or three rows of the carbon tubes, as shown in the sketch above.

Table 1—Recommended Fresh Air Requirements

Space	Cubic Feet Per Person	Fresh Air Generally Required To Maintain an Odor-Free Atmosphere CFM per Person*
Private Office or Home	1,000 and over	15
General Office or Apartment	500 to 700	15
Conference Room or Game Room	250 to 300	30
Average Specialty Store	400 to 500	15
Department Store	300 to 400	15
Bargain Basement	200 to 250	25
Restaurant (Quality)	300 to 400	25
Restaurant (Average)	200 to 300	30
Night Club or Bar and Grill	125 to 150	40
Theater—Auditorium	200 to 300	15
School (Children)	200 to 250	20
School (Adult)	200 to 250	15
Hospital—Operating Room	1,000 and over	40 or more
Hospital—Private Room	750 and over	20
Hospital—Ward	350 to 500	25
Hospital—Clinic	200 to 300	30
Railway—Sleeper	150 to 175	25
Railway—Dining and Club Car	125 to 150	30
Railway—Luxury Coach	100 to 120	30
Railway—General Coach	80 to 100	35
Airplanes	75 to 125	30
Busses	75 to 80	35

*The Ventilation (fresh air) factor in this table refers simply to uncontaminated air, regardless of its source. If it is not obtained all or in part by Air Recovery, the only alternative source is outdoor air and corresponding containing load.

Unit Cooler Design



Two single row panels are employed in this unit cooler to improve the air quality.

Ventilation Problem--

(Concluded from preceding page)

Consequently, large volumes of dilution air are needed in order to maintain the air quality required to assure passenger comfort, night and day. Railroad design engineers were faced with the problem of producing this ventilation within the limits of the power, weight, and space allowed for the heating and cooling equipment.

Activated carbon filtration units fitting into space that was already available solved the problem of providing fresh air comfort economically. By converting used air that was already conditioned, to fresh air, activated carbon supplied ample ventilation without imposing an additional load on the heating and cooling equipment.

After seven years of thorough testing by the railroads, in which every method was tried, activated carbon air recovery equipment is specified for nearly all the new cars on order and being installed on existing cars as rapidly as conditions permit.

To illustrate the second adverse condition—when adequate ventilation requires bringing in large volumes of outside air (which has to be conditioned at considerable cost) a unit store-type cooler in a dress and specialty shop provides a good example.

Conditions

Dress and specialty shop—Volume, 60,000 cu. ft.

Fan capacity (total air)—6,000 c.f.m.

Minimum ventilation—2,700 c.f.m.
Infiltration factor—1,000 c.f.m.
Exhaust—none.

Allowable resistance for air recovery panels—not to exceed 0.2 in. W.G.

Problem

To reduce outdoor air make-up to 1,000 c.f.m. (to counteract infiltration) while providing a minimum ventilation (fresh air) to 2,700 c.f.m. with the aid of air recovery panels at a resistance under 0.2 in. W.G.

Procedure

6,000 — 1,000 = 5,000 c.f.m. recirculated air.
2,700 — 1,000 = 1,700 c.f.m. fresh air to be provided by panels.
1,700 = .34 (Percentage of fresh air to be produced by panels).

5,000

Solution

To reduce outdoor air to 1,000 c.f.m. and provide a total of 2,800 c.f.m. fresh air ventilation, install air recovery panels designed for a total capacity of 5,000 c.f.m. with a resistance of 0.15 in. W.G. The panels may be arranged 2 high x 4 wide or 2 wide x 4 high as preferred.

Economy

Based on average temperature zone conditions, the recovery of 1,800 c.f.m. return air means a capital cost saving of about 5 tons of installed refrigeration for cooling and 180,000 B.t.u. per hour capacity of installed boiler and radiation equipment for heating. It means also an operating saving of approximately 3,750 kw. hours during the summer and 2,000 gallons of fuel oil during the winter seasons.

The third condition, often encountered in unitary conditioners—difficult access to outdoor air or impure outdoor air—and the remedy to such handicaps is typified by the application of activated carbon air recovery units in two 5-ton 2,000 c.f.m. conditioners in a long, narrow and densely occupied office.

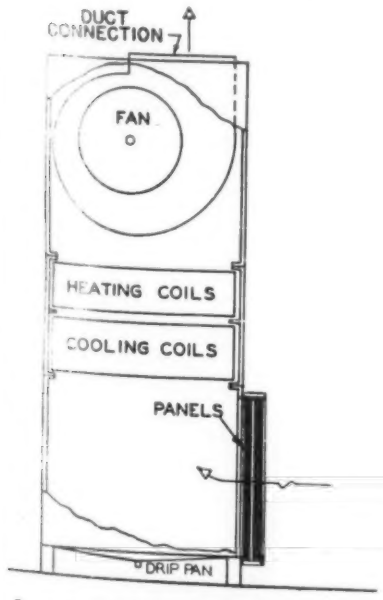
An odorous alley was the only source from which outdoor air could have been drawn and even if this air had been uncontaminated, lengthy and expensive duct work would have been required. By the simple installation of air recovery panels on the return air side of the units, 35% of the recirculated air was converted to fresh air.

Thus 1,400 c.f.m. of clean, fresh air was supplied the office. To condition a like volume of outside air—if it were obtainable—would have required additional cooling capacity of about 5 tons and a comparable increase in heating capacity.

Aware of the need for air recovery equipment that can be readily incorporated in unitary equipment and in all air conditioning and ventilating installations where the space available is limited, air recovery panels are designed with the same over-all dimensions as standard dust filters and installed and serviced with the same facility.

Each size panel is available with from one to three rows of perforated, carbon-filled tubes and four different tube spacings (distance between tubes in each row) to meet a wide variety of performance requirements. This design insures uniform effectiveness of the carbon upon the air flowing through the panel. By recirculating room air through these panels any amount of fresh ventilation air may be obtained, depending upon the number and type of panels.

In a Conditioner



In a unit air conditioner such as shown above activated carbon panels are placed over the air return intake.

WAA Announces Sales In Detroit and Wichita

DETROIT — Sales of surplus air conditioning and refrigeration equipment here and of aluminum and bronze metals at Wichita, Kan., by competitive bidding has been announced by the War Assets Administration.

In Detroit, bidding will close on Feb. 3 on two Frigidaire rivet utility cooling cabinets, Revco cabinets, Chrysler air conditioning units, compressors, Deepfreeze cabinets, chilling units, dry ice storage cabinets, and other equipment.

At Wichita, bidding was to close Jan. 13 on large lots of aluminum sheet, alloy aluminum sheets, round aluminum tubes, aluminum alloy seamless tubing, round aluminum bars, round bronze bars, hard brass strips, silicon bronze tubing, and brass tubing.

American Refrigeration Opens In W. Hartford

WEST HARTFORD, Conn. — The new home of American Refrigeration Service, formerly of Hartford, has been established at 945 Farmington Ave., West Hartford, the former site of Cion's, Inc. A complete electrical appliance sales and service center is being operated by John A. Warner and Edmund Logan.

Completely remodeled and two former stores consolidated into one, 5,000 sq. ft. of space are made available. Manager is William B. Collins.

Grove Labs Installs Conditioning To Keep Summer Output Up

ST. LOUIS — A highly unusual manufacturing problem in the packaging plant of Grove Laboratories, proprietary drug manufacturer here, has been solved by the installation of an air conditioning system featuring close control of temperatures.

The problem was year-around production of ointment suppositories, used in treating colonic diseases. Designed to be easily melted by body heat, the suppositories are manufactured from a variety of ingredients, bonded together with cocoa-butter, which melts at relatively low temperatures.

Formerly, during St. Louis' notorious summer heat, it was necessary to give up production of the suppositories during the summer months —putting a serious load on the packaging department during the rest of the season, and stripping retailers' shelves of the drug item when it was most in demand. Although the suppositories were wrapped in metal foil, and experiments were made in outer coverings, it proved impossible to manufacture them efficiently.

The solution developed by C. W. Schockmiller, production manager for the plant, was the construction of a completely air conditioned "packaging line." This is set up in an enclosure of 50 x 15 ft., with six spun glass insulated walls and double plate glass windows all the way around. Air conditioning for this space is supplied by a 5-ton York "550" package unit, set up at the right side of the room, convenient to both the packaging line and a window.

Due to the extreme insulation of the room, and the fact that only from 6 to 10 girls are employed in it, it has been possible to keep the temperature between 70 and 72° F. when the outside temperature is 96° F. or better, according to Mr. Schockmiller. Thirty per cent of the air circulated is fresh air, for more employe comfort.

Thus kept under cooling during the entire packaging period, the suppositories remain firm and hard. They are rushed on delivery to retail drugstores with instruction to keep them in the store's biological refrigerators, or other cool places at all times. Suppository production, one of the most important fields of the Grove Laboratories, may now be carried out on a year-around basis.

Million-Dollar Paramount Corp. To Sell Appliances

CHEYENNE, Wyo. — A million-dollar corporation to carry on a general merchandising business dealing in home appliances and other merchandise, buying and selling directly or on commission, has been incorporated under Wyoming laws under the name of Paramount Sales Corp. with headquarters here.

The five directors of the concern are Harve Hazen, secretary; R. J. Artese, agent in charge and manager; Thomas Seivert, Ralph Bott and Joseph Elliott.

Term of the corporation is 50 years and the capital stock is divided into 10,000 shares of the par value of $100 each.

'Heir Conditioner'

Baby Is Assured Even Temperature, 50% R.H. In Newest Juvenile Unit

Fuse and Enclosed Mechanism Guarantee Safety

OMAHA, Neb.—An air conditioned unit called the "Heir Conditioner," designed to better the physical environment of babies by keeping them in a uniformly regulated temperature with 50% relative humidity and filtered air, is going into production here under the management of Philip D. and J. Paul McIntosh, brothers. The unit resembles a showcase, and may be categoried either in the major appliance or juvenile furniture line.

Co-designers of the unit are Philip McIntosh, student at the University of Nebraska College of Medicine, and Arthur L. Dunn, who built the first two air conditioned cribs about a year ago when both were expectant fathers. They got the idea from an article on child care in a national magazine, written by Prof. E. B. Skinner of Indiana University. In addition to the infant's welfare, the unit was designed as a labor saver for mothers, as it means less washing and ironing and does away with unnecessary and tiring stooping and bending when bathing and dressing the baby.

Top Is Detachable

The top of the unit is detachable and within its base are the heating element, blower, humidifier, air filter and storage compartment, with all electrical parts sealed in a fireproof compartment. Pilot lights on the exterior of the cabinet indicate when the heating element is on or off. Two-speed heat and blower controls are out of sight and reach of younger children. All electric current used by the unit goes through one six-ampere fuse which carries only a five-and-one-half-ampere load, and in event of a short circuit the fuse blows immediately before any damage can be done.

The top compartment where the baby is confined fits flush with the base and is completely insulated. Insulation is covered with a washable plastic fabric that also serves as padding. The mattress on which the infant lies is waist-high for the average woman and is made of canvas webbing laced with nylon cord. This advantage, according to Mr. McIntosh, encourages the physical development of the child and eliminates the hazard of suffocation in a too-soft mattress. The mattress may be kept taut at all times by the simple expedient of tightening the nylon cords.

Large French-type doors open separately and fasten simultaneously at bottom and top with a single-action lock.

Temperature at 86°

Interior temperature is themostatically controlled at 86° so that the infant is warm and comfortable without being encumbered with excessive clothing. The mattress is kept dry by the constant circulation of filtered air, so that a damp mattress dries in 20 minutes. A sheet that operates like a roller towel with the turn of a handle simplifies changing bedding.

When the child is asleep, window shades have been provided to roll down over the plexiglass panes of the crib. Should the temperature within the crib waver while the mother is busy elsewhere in the home, a battery-operated alarm calls her attention. The crib also is partially sound-proofed.

Three of the cribs already have been built and are in use. Mr. McIntosh has spent only part time building Heir Conditioners up until recently, but with the return of his brother, Paul, from army service, he plans to make it a full-fledged business and partnership.

The Heir Conditioners sell for $300 and the McIntosh brothers already have orders for six units. They have made plans for a deluxe model to sell for $360, and for a refrigeration unit which is going to be used as part of the crib's equipment in hot climates.

Frozen Bakery Products Find Steady Clientele In a Suburban Community

Progressive Housewives Take To Them; Display Facilities Are Store's Big Need

WEST HAVEN, Conn. — Five months of practical experience with "Fro-Doe," their own line of unbaked frozen products, has convinced Wolfe's Quality Food Shops, here, that frozen goods of this type will sell in an average American community and keep on selling beyond the novelty wear-off point.

Fred F. Wolfe and his sons, Fred Wolfe, Jr., and Robert A. Wolfe, who operate Wolfe's Quality Food Shops in West Haven and East Haven, went into the freezing field last winter when it was still considered a Midwestren innovation and thousands of bakery owners were openly skeptical.

Among many objections voiced by old-line retail bakers, one which was particularly pertinent, involved the assertion that frozen unbaked products would be acceptable chiefly to apartment house dwellers of great cities and families of much more than average means.

The two suburbs of New Haven, East and West, are good communities in which to test this theory. Both are relatively small in population. West Haven has about 35,000 residents and East Haven half that number. Neither is a wealthy community. The two independent towns, each still governed by the traditional New England town meeting, are "bedrooms" for thousands who are employed in New Haven factories, offices, stores, transportation, and distribution concerns.

The towns have few apartment houses, comparatively few multi-family dwellings. Most homes are of the one-family type, but there are very few mansions.

10% of the Customers

According to Fred Wolfe, Jr., who runs the frozen goods end while supervising all production for the two Wolfe shops, about 10% of their regular bakery customers form the steady market for frozen items.

Mrs. John Rogers (fictitious name, of course) is a typical member of the 10% bracket. Her family is not wealthy, but John has a pretty fair white-collar job and Mrs. R. likes to keep up-to-date. Mrs. R. bought a frozen pie largely out of curiosity and now buys frozen items quite regularly because they save her time, they taste good, and—very important—they impress her guests.

Mrs. R. can brag that she "baked it herself," which, after all is no lie. Or, if she's out to impress in a different way, she tells the whole story of the origin of her pie or cake or whatever it is, and is labelled "modern," "progressive," or something similar in the bridgetable and Saturday morning market character-slaying sessions thereafter.

The Wolfes went into freezing after close study, chiefly by Fred, Jr., of its possibilities. On trips to Chicago for that special purpose, the older son visited the establishments of Robert Woods and Gordon Male and dug deeply into the subject.

Equipment and Cost

Because the Wolfe's bakery production was already at a high level, it was necessary to enlarge the main shop in West Haven to provide space for freezing and to arrange for freezer storage space elsewhere. They installed a 10 x 12 freezer which, including the unit and construction, cost $3,000. Their initial cost on packaging ran about $1,000. A new refrigerated truck will stand them another $4,500, and the latest shop addition, 90 x 30 ft. in overall dimensions, will run about $12,000.

The distance between the main shop in West Haven and the store in East Haven is about seven miles across heavy New Haven city traffic, but it has been found possible to transport frozen goods in shipping boxes in a standard truck. The refrigerated truck will facilitate wider distribution and the Wolfes are now preparing to market their frozen line on a statewide basis through quality food outlets.

The frozen-plate system is being used and present capacity is 1,900 lbs. every two hours. A temperature of -20° F. is maintained. After freezing, the goods are taken off the plates and stored between 5 and 10 below. Fred Wolfe, Jr., points out that storage temperature should never rise above -5.

Mr. Wolfe declares that at the present time demand for frozen products exceeds the supply, adding that an executive of one large group of food stores reported to him that frozen bakery products made up 23% of the total sales of all frozen foods in a recent period.

"One of the biggest problems in frozen foods merchandising," Mr. Wolfe remarked, "is display. Open display freezers of the serve-yourself type are costly but vitally necessary if a real sales job is to be done. You can't sell frozen products successfully with non-visible equipment."

The Wolfes believe very strongly that the frozen goods field is one for bakers. Fred Wolfe, Sr., opened his West Haven bakery 35 years ago and has remodeled many times. Always receptive to new thoughts, this progressive baking family finds no novelty in pioneering. They've been doing it for years. They believe the retail division of the baking industry has a fine, sound future, and that retail bakers should exploit frozen goods while continuing to produce high-quality ready-to-serve foods.

Introduction of the "Fro-Doe" line was heralded by large newspaper space, running an entire week; radio announcements; large window displays and effective point-of-sale promotion. They installed an electric range in each store to illustrate proper handling and baking of the frozen items. An eight-page folder, giving full directions for each product, was printed.

Items In the Line

The 13 items in the "Fro-Doe" line are as follows:

Apple pie (24 oz.)		$ .89
Peach pie (24 oz.)		.89
Blueberry pie (24 oz.)		.89
Baking powder biscuits (17 oz.)		.56
Gold cupcakes (12 oz.)	doz.	.50
Chocolate cupcakes (12 oz.)	doz.	.50
Gold Loaf Cake (11 oz.)		.46
Cream puff shells (12 oz.)	doz.	.49
Dinner rolls (12 oz.) and Sweet rolls	doz.	.40
Blueberry muffins (12½ oz.)	doz.	.89
Angel loaf cake (7 oz.)		.39

Standard knockdown cartons of waxed cardboard are used by the firm for all products in the line. Labels are of standard design, featuring the name "Wolfe's Fro-Doe" and are pasted onto the package.

Free use of slogans has proven effective in introducing the line. The Wolfes' stress "No fuss—no muss" and "It's smart to shop the modern way."

Fred Wolfe, Jr., doubts that unbaked frozen goods will displace the standard bakery line in the predictable future. It will be, however, a profitable side-line for many bakers, and one which should be kept in the bakery fold, he believes.

The Wolfes' spent months in study and experiment before they put their frozen line on the market. The first display of merchandise was made at the spring convention of the Connecticut Bakers Association in Waterbury on April 8, but public announcement was not made until some weeks later.

One of the great advantages of frozen unbaked goods emphasized by Mr. Wolfe is the elimination of stales, a problem which has plagued bakers little during the war and postwar years, but which return inevitably. He points out that frozen goods will keep almost indefinitely and that production can be regulated to demand by refilling storage space. The "rainy Saturday" hazard disappears when products are frozen.

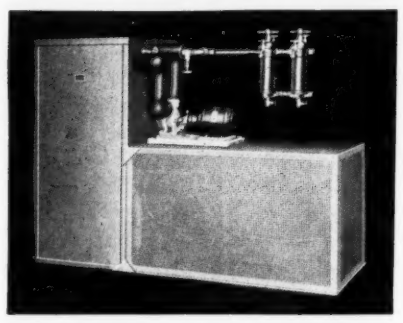
What's New

Filtrine Water Cooling Systems Are Packaged

BROOKLYN — Filtrine Mfg. Co. here has introduced several models of a new complete "packaged" circulating-water-cooling-system. These are said to be suitable for cooling and circulating light liquids or water for air conditioning, candy hardening, drinking water, film processing, industrial processes, jacket cooling, mold cooling, and welding machines.

According to the manufacturer, the evaporators employed may be used with any refrigerant, including ammonia. The large storage provided for cold water is said to provide for "peak" requirements.

The seven packaged models range in capacity from 38 to 311 g.p.h. Dimensions of the smallest model are 24 in. deep, 60 in. wide, and 57 in. high; the largest models are 36 x 110 x 70, according to manufacturer's specifications.



One of Filtrine's new circulating-water-cooling systems. The above model, one of the "RCP" lines, includes a storage cooler, centrifugal pump, insulated chilled water lines, duplex water filters (extra), and housing for refrigerating machines (not included).

Tough, Alloy Hand Shears Developed by Bremil

ERIE, Pa.—Bremil Mfg. Co. here has developed a set of two all-alloy, portable hand shears, featuring component parts equal to the compound leverage strain.

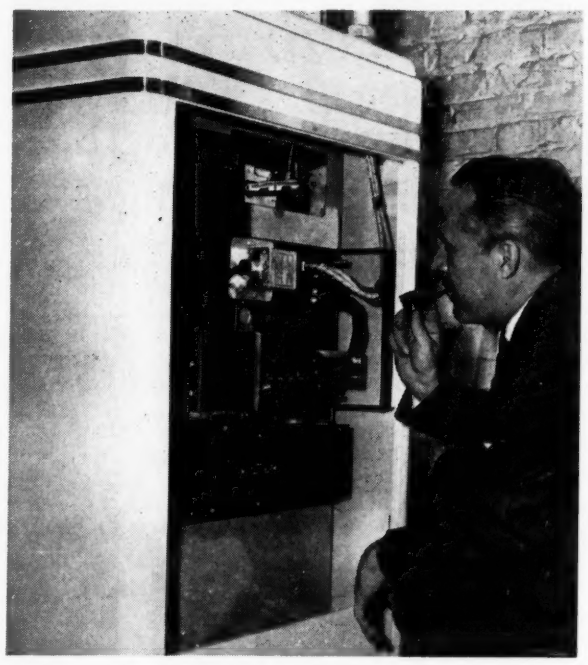
The strength of the shears is said to be due to the fact that the shears are made with all alloy in levers, bolts, and pivot.

Shear No. 1 will cut sheet metal up to 11 gauge without springing the jaws, while shear No. 2 is 95% stronger at the pivot than similar shears, the manufacturer's announcement states.

Regardless of the manpower exerted on the handle, this shear is claimed to operate without overstressing any of its parts. The No. 2 shear, which weighs 28 lbs., is said to have worked successfully on ¼ in. thick .40 carbon stock.

The Bremil shears are equipped with removable heat-treated, machined, and surface ground blades, specifications show.

'Brain' of the New Electric Furnace



At left is what is known as the "brain" of one of the newest developments in post-war home heating, the Electromode electric furnace. The "brain" consists of the Minneapolis-Honeywell system of automatic controls that maintains a year-round check on heat-flow from a furnace roughly the size of a home freezer unit.

* * *

Electromode Corp. Starts Output of Heating Units

ROCHESTER, N. Y. — Production of electric home furnaces, equipped with automatic controls which are claimed to make them the most efficient units of this kind yet developed, is being started by the Electromode Corp. of Rochester.

R. E. Peguignot, general manager of the company, said most of the furnaces built this year will be shipped to Tennessee Valley states and Pacific Northwest where utility rates are low enough to make this kind of heating practicable.

The heart of the furnace consists of six patented elements like those used in heaters which the company manufactured for U. S. submarines during the war. Its "brain" is the Minneapolis-Honeywell Regulator "Moduflow" system especially adapted to control the heating coils.

This furnace, which looks more like kitchen equipment than the conventional central heating plant, is being made in two sizes, one for homes of eight to twelve rooms, containing up to 24,000 cu. ft. of room space; the other for homes up to 11,000 cu. ft. Each is 48 inches high, width varies from 26½ to 33 in. and the height from 58 to 72 in. Cabinets are of white enameled steel and have two neat chromium bands near the top for decorative purposes.

Although the furnace was developed before the war, production was halted by wartime demand for electromode heaters on submarines and Signal Corps trailers. The unit has been thoroughly tested in the plant and last year a typical installation was made in the home of H. D. Seaton on Lookout Mountain, in Chattanooga, Tenn., for an entire season's test run.

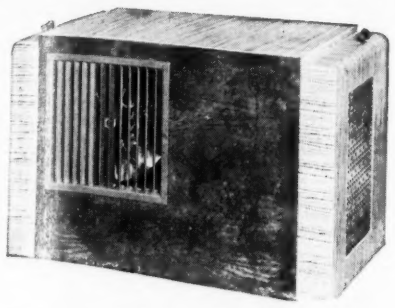
The furnace is rated at 25 kilowatts, 230 volts, 109 amperes, 60 cycles, a.c., single-phase, and has a rated output of 85,375 B.t.u. at full capacity. The house has an installed heating load of 1.4 watts a cubic foot. The load of 25 kilowatts is divided into six heating elements, each rated at 4156 watts.

Forced air circulation is obtained with a fan rated at 1,400 c.f.m. and driven with a ¼-hp., 115-volt belted motor. An air filter is located in the incoming cold-air duct of the furnace. Humidity control apparatus is an integral part of the system, being installed on the furnace in the outgoing hot-air duct. Removable filters clean the air.

The Chattanooga test furnace was regulated by outside and inside thermostats, but all units being manufactured by Electromode now are equipped with "Moduflow." The direct furnace control is an integral part of the unit, being mounted compactly in the cabinet. The "Moduflow" motor, controlled by exterior and interior thermostats, meters the flow of power to the six heating elements, turning them on or off individually as the variations in temperature demand.

Records kept by E. Rodger Dodson, supervisor of the lighting department, Electric Power Board, Chattanooga, showed that consumption for the 1945-46 heating season was about 27,600 kilowatt-hours, representing a heating cost of approximately $203. Complete insulation of the house would have decreased the cost approximately 20%, he stated.

What's New (Cont.)



Window model of Kauffman room cooler.

* * *

Kauffman Offers 6 Room Cooler Models In '47 Line

ST. LOUIS—Four floor model type room coolers and two window models, representing an overall range of cooling capacity of from 1,500 cu. ft. rooms to 9,000 cu. ft. spaces, comprise the 1947 line of Kauffman Air Conditioning Corp. here.

The window room coolers will fit any window 21 in. wide or more, only electrical connections being necessary. The type "Y" model will cool a 1,500 cu. ft. room with average exposure and lighting, while the type "X" window unit will handle a 2,500 cu. ft. room, the company claims.

Cooling, dehumidifying, circulation, and filtering of air is accomplished by the units, which employ a single motor and are controlled by one switch. Air filter is removable. Distribution of cooled air "in sheet form at breathing plane" is a special feature claimed by the manufacturer. The steel cabinet is finished in two-tone walnut hand-rubbed.

Floor type models in the line also have air-cooled condensing units, and employ but one motor. All water of condensation is employed to cool the refrigerant gas, thus cutting horsepower requirements of the units, Kauffman claims. A heavy copper reservoir pan is provided for surplus condensate.

All moving parts are mounted on rubber vibration dampers to reduce noise. Conditioned air is delivered from the units in a sheet form at an angle of 25° to keep the air at the "breathing plane," the company explains.

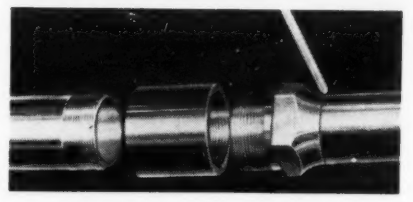
Type "W" unit is powered by a ¾-hp. motor and has the capacity to cool a 2,500 cu. ft. room, the company claims. The two-tone walnut finish steel cabinet measures 27 in. long, 15 in. wide, and 33¾ in. high.

Type "A" is designed for 4,000 cu. ft. room. It is powered by a 1-hp. motor and is 34 in. long, 17½ in. wide, and 41 in. high. Type "B" is for a 6,000 cu. ft. room, has a 1½-hp. motor, and measures 39 in. long, 17½ in. wide, and 43 in. high. Type "C," the largest model, has a 2-hp. motor and is intended for a 9,000 cu. ft. room. It is 44 in. long, 24 in. wide, and 46 in. high.

Adapter Fitting Permits Use of Thinner Tubing

PORTLAND, Ore.—A new stainless adapter fitting, which permits the use of thin-walled stainless steel tubing in many piping installations where standard IPS stainless pipe is also used, has been introduced by the Electric Steel Foundry here.

The Esco P-T adapter, as the new item is called, is an addition to a full line of stainless steel flanged and screwed pipe fittings manufactured by Electric Steel Foundry.



The Esco P-T Adapter

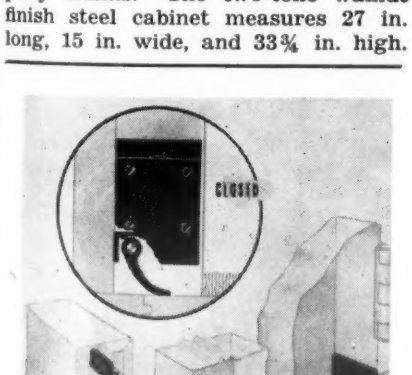
* * *

Using the adapter fitting, stainless steel tubing can be incorporated in lighter take off systems from an already established standard piping layout, according to the company.

The tubing is butt-welded to the adapter and thus is permanently fitted with standard pipe threads and can be assembled as any pipe, the manufacturer says. A system using this method is readily dismantled for cleaning or inspection, he adds.

West Coast Firm Set to Move

SAN DIEGO, Calif. — French, Hermes, & Thomas, Inc., 726 9th Ave., will relocate at Madrona and Landis Sts., Chula Vista, as soon as remodeling of a new factory is completed.



Cross-section views of the new door seal.

* * *

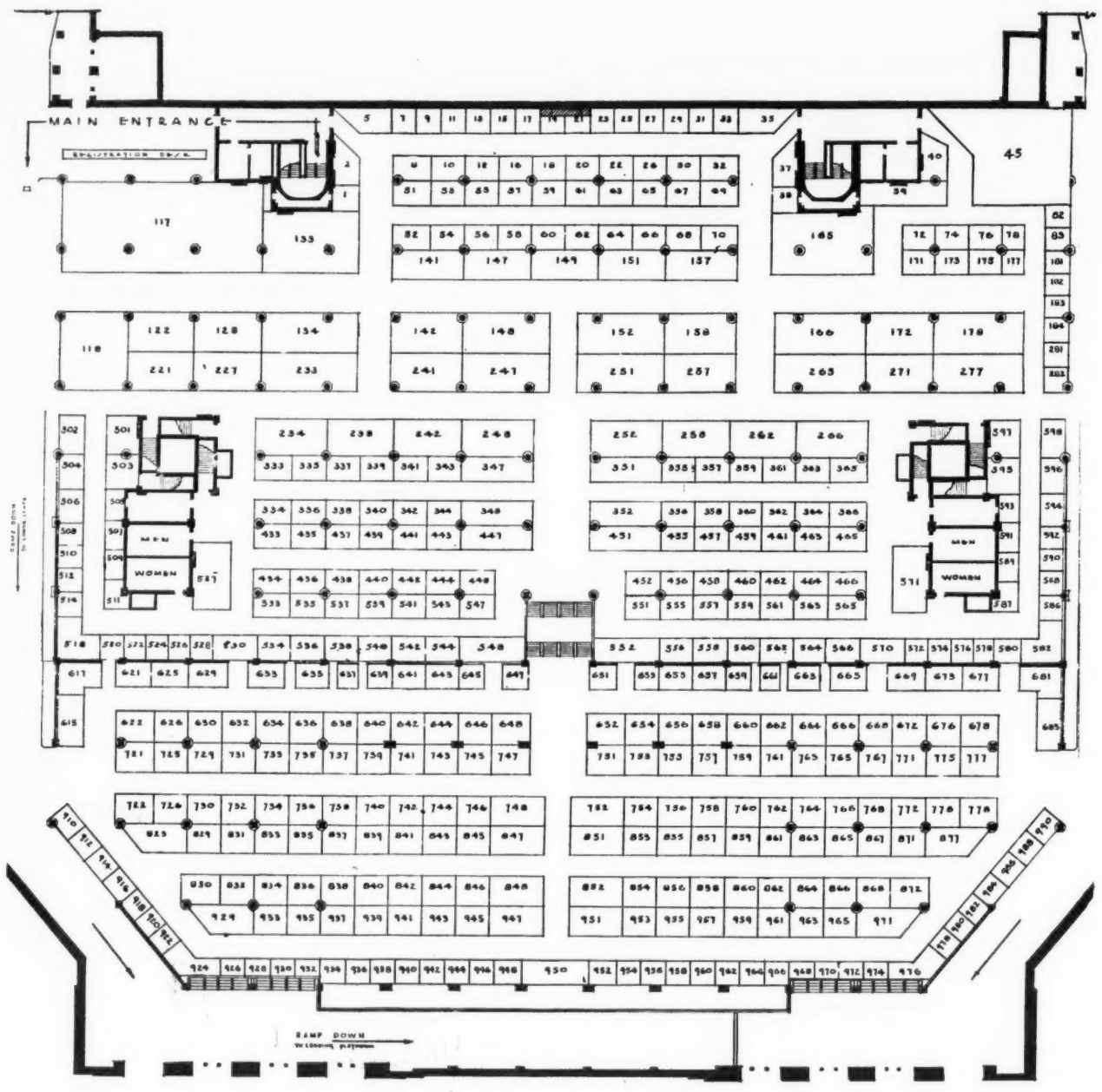
V&L Home Utilities Makes Draft-Proof Door Seal

ROCKFORD, Ill.—V. & L. Home Utilities Corp. here claims to have developed a draft eliminating door seal, which anyone can install in a few minutes. Called "Draft Bloc," it is said to be completely automatic in operation.

Upon closing the door, the sealing blade is pressed against the floor, adjusting itself to any size opening up to 1¼ in. When the door is open, the seal snaps up out of sight, permitting the door to pass over thick rugs, the manufacturer points out.

It is of all metal construction with a molded rubber sealing plate, which is carried between a pivot plate and the actuating lock. Retailing for $3, it will fit any standard door on either the inside or outside.

Heating & Ventilating Show Exhibitors and Booth Locations



	SPACE NO.
Ace Engineering Co.	22
Acme Industries, Inc.	663
Adams Mfg. Co.	843
Aerofin Corp.	271
Air Conditioning Assoc. of Cuyahoga County	508
Air Conditioning & Refrigeration Div., Worthington Pump & Machinery Corp.	642-644 741-743
Air Conditioning & Refrigeration News	976
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Air Maze Corp.	67-69
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American Air Filter Co., Inc.	929-933-935
American Artisan	552
American Flange & Mfg. Co., Inc.	837-839
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American Radiator & Standard Sanitary Corp.	117
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Borg-Warner Corp.—Norge-Heat Div.	848
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Carrier Corp.	233
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Central Die Casting & Mfg. Co.	637
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Coroaire Heater Corp.	763-765-767-771
Crane Co.	955-957-959
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Cyclotherm Corp.	863-865
Dayton Rubber Mfg. Co.	460-462
Delavan Engineering Co.	934-936
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Friez Instrument Div.—Bendix Aviation Corp. 742-744-746
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General Controls Co. 157
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Jefferson Electric Co. 734
Jenkins Bros. 455-457
Johns-Manville 641-643
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Rutledge Boiler Co. 514
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Spencer Thermostat Co.—Metals & Controls Corp. 646-648
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Surface Combustion Corp. 754-756-758 853-855-857
Syncromatic Corp. 59-61
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Williams Oil-O-Matic Div.—Eureka Williams Co. 753-755-757
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Yarnall-Waring Co. 617
York Corp. 152
York Heat Div.—York Shipley Inc. 662-664-666-668-672-676-678
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INSIDE DOPE

by GEORGE F. TAUBENECK

(Concluded from Page 1, Column 1)

But what has that to do with new techniques?

To be sure, machine tools were invented which could bore holes in 28-cylinder crankcases simultaneously during the war.

Fine, dandy.

What peacetime automobile manufacturers, though, will specify 28-cylinder motors? That we ask you.

Again, we've learned how to shear metals to 30,000th-of-an-inch tolerances. What good will that expensive-processing knowledge do us in the fabrication of washing machines, and electric irons?

New Industries— Not Startling Efficiency

Of course one can't deny that certain to-hell-with-the-cost scientific developments did turn up during World War II—especially those inventions which had to do with radio-microwaves and new methods of creating motive power.

Some of these discoveries may be astounding, after they have been evaluated properly in terms of peace-time needs.

But such inventions lead to *new industries*—not to exceptional gains in the productive power of laborers in old, established industries. They are yet to be heard from, in terms of higher living standards.

Are People Working Harder?

As a matter of fact, all studies of labor productivity *made by government* during the last three years reveal clearly that both skilled and unskilled labor is producing less currently than it did before the advent of war.

The Federal Reserve Board statistics of industrial production do show an increase in *total output.*

But they take no notice of the fact that more than eight million *extra* women and male oldsters (to take no account of "child labor"—which was conveniently ignored by the statisticians) were lured into the nation's producing force during wartime. A great many of these proselyted folk aren't working today.

These statistics also take no account of the extraordinary overtime work registered by America's labor force in the late, unlamented World War II.

Where Do They Get That Stuff?

Technological improvements? My eye! It was just a lot more people working exceptionally long hours that raised the figures.

New techniques, yes. New discoveries, new inventions—right again. But these discoveries will lead to the inauguration of new industries—rather than to the easing of working hours in existing fields.

It takes more man-hours to produce air conditioning and refrigeration equipment today than it did before the war.

And "technological improvements" created by war-stresses certainly won't come near to raising labor's efficiency by 70%!

We'll all be lucky if labor comes within 25% of matching its 1941 productive efficiency during the next two years. That's how low the willingness-to-work of Our People has sunk.

To the Point

The following contribution will add fuel to the above fire:

J. M. Keely Sales Co.
Miami, Fla.

Editor:

In your extremely interesting and informative "Inside Dope" column, you have, in my humble opinion, failed to put your finger on the real cause for low productivity in our factories and the manpower shortage.

To me, it appears we will never be able to get an hours work for an hours pay until we can again see the daily line at the employment windows. This will not come to pass as long as our spendthrift government pays in bonuses, subsidies, and what have you, some 4 or 5 million returned veterans so they can completely and comfortably loaf at schools, colleges, and on the job training racket. When this gravy train is turned down the alley, and these men have to work for a living as they fought for the right to do, then and only then, will we get efficient production.

The present worker sees an empty place beside him, looks out the window and sees nobody at the employment window, then feels he can safely take his own amount of sweet time because regardless of how bad he is, he can't be replaced.

J. H. IRVINE,
Appliance Division

And then there's this item:

James D. Mooney, president of Willys-Overland, predicts that prices will stay high and may even go higher.

"We are obviously going to stay on a high price plateau," he told the Newspaper Advertising Executives Association last week. "The plateau might easily move a lot higher unless we can stop the depreciation of our money, and conversely, the rising prices that are a natural consequence of cheapened *money.*"

Mr. Mooney goes back to one of the favorite reasons for high cost of automobiles: the inefficiency of plant working conditions.

On the 40-hour week, plants work an average of 20 eight hour days a month, he pointed out. This is a total of 160 hours out of a possible 720, he said, or only 22% of the time available.

"If we allow something for the inefficiency that is going on and rate the operation down, say one third because of it, we can say that generally we are working about 15% of capacity," he stated.

Mr. Mooney urged the advertising men to exert their influence "to get people back to work so we can cut the cost of production and distribution."

Some Heating & Ventilating Show Exhibits Of Special Interest to Dealer-Contractors

CLEVELAND—Among the many exhibits scheduled for the Seventh International Heating and Ventilating Exposition here will be several displaying air conditioning equipment designed for year-round operation and for comfort cooling, and equipment of interest to producers and dealers in such equipment.

Acme Industries, Inc.—A newly designed evaporative condenser said to be readily accessible and to cut service problems to a minimum will be displayed, along with the "Dry-Ex" water cooler and a line of shell and coil heat exchangers.

Air Devices, Inc—Air filters and diffusers and wind-actuated exhausters are among this concern's exposition products.

Air-Maze Corp.—"Greastop" and air filters will be shown by Air-Maze.

Airtemp Division, Chrysler Corp.—Three types of packaged air conditioners, a room cooler, a sealed radial compressor cutaway demonstrator, and a residential year-round air conditioner in operation are to be included in Airtemp's exhibit.

American Air Filter Co., Inc.—A special electronic precipitator showing the removal of tobacco smoke will feature this firm's display.

American Flange & Mfg. Co., Inc.—This firm will show samples of "Ferro-Therm" steel insulation.

American Thermal Industries, Inc.—What it calls "revolutionary" 5 and 7½-ton packaged air conditioning units will be exhibited by American Thermal Industries. The company also will display a section of a 5-ton-unit frame of new fabricated, aircraft-type construction.

Anemostat Corp. of America—Ceiling and wall-type draftless air diffusers in operation, and units in combination with lighting fixtures.

Auer Register Co.—On exhibition in Auer's booth will be warm air and air conditioning registers and grilles.

Automatic Products Co.—A-P valves and controls are scheduled to be displayed.

Buffalo Forge Co.—An evaporative water cooler and a "PCGW" wet glass cell air washer. Along with these units, it will have "LL" and axial flow fans and industrial exhausters.

Carrier Corp.—Feature of Carrier's display is to be the new "5 Series" condensing unit. Also on display will be a conduit "Weathermaster" system, heat diffusers and unit heaters, and self-contained air conditioners.

Char-Gale Mfg. Co.—Aluminum fittings, registers, and grilles.

Clarage Fan Co—Heading the display will be the "Multitherm" blow-through type air conditioning unit in which are incorporated multiple face and by-pass dampers allowing individual temperature control of separate zones.

W. B. Connor Engineering Corp.—Connor representatives will give practical demonstrations of "Dorex" activated carbon air recovery and purification equipment and "Kno-Draft" adjustable air diffusers.

Curtis Refrigerating Machine Division, Curtis Mfg. Co.—Packaged air conditioning units and refrigerating and air conditioning compressors.

Detroit Lubricator Co.—Control equipment for refrigeration, air conditioning, and gas and oil heating.

Emerson Electric Mfg. Co.—Motors for a variety of heating and cooling units, and several types of fans.

Frick Co., Inc.—Picturizations of installations of air conditioning and refrigerating equipment.

Henry Valve Co.—Henry Valve will show off its new solenoid, ammonia solenoid, and check valves, and new magnetic float switch for pressure vessels. Besides these, there will be displayed packed and packless valves; improved designs of refrigeration dryers, strainers, and relief valves; and other automatic control devices.

Ice Air Conditioning Co., Inc.—Five and 7-ton self-contained units, heating and cooling coils.

Imperial Brass Mfg. Co.—Refrigeration valves and tube fittings, refrigerant dehydrators and filters, shutoff and saddle valves, tube fittings and working tools, and welding and soldering equipment.

Kauffman Air Conditioning Co.—Room and store coolers. The room-cooler line displayed will include ½ and ¾-ton window models and ½, ¾, 1, and 1½-ton floor models.

Lau Blower Co.—Lau's booths will house air conditioning and warm air heating blowers, blower accessories, and exhaust fans.

Marsh Corp., Jas. P.—Gauges, thermometers, steam and hot water heating specialties, and the "Tri-trol" regulator.

McQuay, Inc.—Air conditioning units, heating and cooling coils, and unit heaters.

Minneapolis-Honeywell Regulator Co—A display of electronic controls will be the feature. The complete display will include, in addition, controls for air conditioning, panel heating, heating, aeronautical, railway car, and refrigeration applications; domestic air registers; recorders; and "Moduflow."

Owens-Corning Fiberglas Corp.—"Dust-Stop" air filters and industrial and equipment insulation.

Pacific Mfg. Corp.—Window-type packaged air conditioners.

Penn Electric Switch Co.—Line and low-voltage room thermostats, limit controls, stack switches, stoker timer relays, a day-night clock, temperature and pressure refrigeration controls, water and solenoid valves, and humidistats.

Raytheon Mfg. Co., Industrial Electronics Division—A room unit precipitator, a washer-type home unit, an industrial package unit, an industrial unit-manual, and 200 and 400-watt power supplies.

Sturtevant Co., B. F., division of Westinghouse Electric—Air conditioning, air cleaning, and air handling equipment on display.

Torrington Mfg. Co.—"Airistocrat" propeller fan blades and "Airotor" blower wheels.

Trane Co.—Twenty types of its products will be exhibited by Trane: a reciprocating compressor, a centrifugal compressor, the "Climate Changer," the "Custom-Air" unit.

United States Air Conditioning Corp.—A feature of this company's display will be the newly designed "usAIRco" unit heater with "Deflecto-Grille." The firm also will show its 3-ton refrigerated "Kooleraire," a room ventilator, blower, unit air conditioner, and a blast heat coil.

Utility Appliance Corp.—A new blower wheel manufactured by Utility Appliance is scheduled for display at the exposition, along with evaporative air coolers, blowers, fans, and other products.

White-Rodgers Electric Co.—A complete line of automatic controls for both heating and air conditioning, plus refrigeration temperature and pressure controls.

Worthington Pump & Machinery Corp.—A centrifugal compressor, a self-contained air conditioner, a "Freon" refrigeration unit, an ammonia refrigeration unit, and an evaporative condenser.

York Corp.—Emphasis at the York booth, which will contain a complete line of air conditioning and refrigeration equipment, will be on turbo compressor systems.

They'll Do It Every Time . . . . By Jimmy Hatlo

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The Heat Pump (Reverse Cycle Refrigeration)

REVERSE cycle refrigeration (which is also a means of heating) is rapidly passing from the experimental stage into the stage of commercial practicality.

Three manufacturers are already in production on units embodying this development, while 13 other firms are known to be conducting heat pump experiments. Still more are reported to be giving the idea serious thought.

Envisioning reverse cycle refrigeration as an integral part of the all-electric home and as a means of evening the electrical load throughout the year, public utilities are enthusiastic about its development, and several of them are backing it with full support.

Some utility executives believe that use of the heat pump in only 25% of the homes in one locality would double that district's kilowatt consumption.

So, let's look at this reverse cycle thing for a moment.

The three heat pumps now in production use either air or the earth as a source of heat. Drayer-Hanson's Airtopia unit uses only air, although a unit employing water is also in the experimental stage. Heat pumps manufactured by Muncie Gear Works and the Terra-Temp Co. of Indianapolis go into the earth for their source of heat. Muncie drops water pipes 200 ft. into the ground. Terra-Temp buries its pipe horizontally well underneath the earth's frost line.

Air, as a source of heat, is satisfactory in mild climates where the temperature seldom drops below 20° F. (At lower temperatures, frosting on outdoor equipment causes trouble.) In zones where the weather is not so mild, the earth seems to offer a better source of heat.

At the present time, the initial cost of a reverse cycle system far exceeds that of other heating systems. Right now, it would cost the owner of a six room house approximately $2,800 for an installation, as compared to $750 for a warm-air oil furnace or $1,750 for a furnace plus a summer air conditioning system. All-year reverse-cycle systems selling for $1,000 are foreseen, though, when quantity production arrives.

Once installed, the heat pump is said to produce several times the heat given off by other fuels per unit of energy required. For instance, one reverse cycle system operating in Pittsburgh (using air as a source of heat) has demonstrated that its consumption of electricity costs no more than a furnace burning coal at $14 per ton, oil at 10 cents per gal., natural gas at 80 cents per 1,000 cu. ft., or manufactured gas at 40 cents per 1,000 cu. ft.

Naturally, the cost of operating a heating plant depends upon that plant's location. A Southern home can be heated much more cheaply than one located north of the Mason-Dixon line. And a home in Pittsburgh can be heated with less fuel consumption than one in Duluth.

So it is with the heat pump. In the South, the heating capacity of a reverse cycle unit would have to be no larger than its cooling capacity. Further north, the heat pump would need extra refrigerating capacity in order to do its summer air conditioning job.

The real saving to the consumer, however, comes in the ability of this single, integral mechanical device unit to do both heating in winter and cooling in summer. In addition, it keeps the air filtered and pure, provides proper humidity, and requires no bulky, inconvenient fuel supplies.

All in all, it would seem that reverse cycle refrigeration may have a big future. Everybody in the industry should keep his eye on it.

Filter 'Laundry' Is Cleaning Permanent Types for Re-use at 30 Cents Apiece

By W. M. Sharp, General Manager, the F. D. Crew Co., Inc., Philadelphia

Considerable savings can be achieved for the owner of an air conditioning system through the services offered by our company, which operates a plant and specially designed machinery to clean the permanent, metal type filter used in all types of air conditioning systems.

We are saving approximately $3,100 dollars a year for one of our clients who formerly used throw-away filters. Other clients report comparable savings, and, in addition, we believe this filter "laundry" service results in better filters which more effectively remove the dust from the air. Also, the nuisance of constantly buying replacement throw-away filters is eliminated.

This filter cleaning machinery was developed by Frank D. Crew during the war at the suggestion of the U. S. Navy. It was so designed that approximately 1,000 filters could be cleaned in eight hours, representing a tremendous advance over the laborious, time-consuming, hand-cleaning methods.

In the Crew company's Air Filter Laundry an extensive conveyor system is employed. Filters are hooked on to regularly spaced tongs and first pass over a row of shakers where the loose dirt is shaken off. Thence the filters pass through two 500-gallon tanks filled with a caustic solution to remove dirt and grease.

Next two hot water tanks and a hot water spray chamber remove traces of the caustic solution on the filter, after which the filter conveyor line goes through a hot air drying chamber. Final operation—recoating of the filters—is performed in an automatically controlled oil spray chamber. The filters are then removed from the conveyor and stacked for delivery.

Our charges to cur customers are based on the number of filters to be serviced and almost invariably represent to the customer a substantial saving as compared to doing the work on his premises. Using our service, the customer need allot no space for cleaning tanks and other equipment, nor invest in solvents or adhesives.

Further, by using our service, a definite program is created and followed to insure that the filters will be cleaned as often as required, and no oftener. A contributory cause of trouble with ventilating and air conditioning systems also is eradicated.

Many filters are cleaned on a calendar, or time, basis—that is, the user decides they should be cleaned every six weeks, four weeks, or the like. While this is often desirable, the most logical method is to clean the filters on a dirt-accumulation basis.

Accordingly, we make available to our customers a filter resistance gauge. This gauge shows an increasing resistance to the flow of air through the filters as the dirt accumulation rises in the filters. This means we clean our customers' filters when the dirt deposit dictates and not necessarily on a time cycle basis.

A permanent filter, such as we specialize in servicing, has an extended life span. By avoiding unnecessary filter cleanings, we save our customers a considerable amount of money over a period of years.

A user of the throwaway, or temporary, type filter is first attracted to it by its lack of need for cleaning, but we believe that the recurrence of the cost of buying new filters will dampen his original enthusiasm.

The permanent, or metal, filter holds more dirt than a throwaway filter. The dirt penetrates the metal filter instead of lodging chiefly on its face. This means that a permanent, or metal, filter requires cleaning less often than a throwaway filter should be discarded. It means, too, that the user of a metal filter spends approximately 30 cents to clean a filter instead of $1.50 to buy another throw-away.

Many dealers who service warm air furnaces and air conditioning equipment find, that once the user turns to metal filters their service calls are reduced. Many service calls result from the fact that throw-away filters are often not discarded soon enough, and once they become filled with the dirt, they prevent satisfactory operation of the unit or furnace and cause the owner to send in a service call.

Because the metal filter is available in various types to meet different operating conditions, it is more adaptable to applications of industrial air filtering. The throw-away filter comes in only one type.

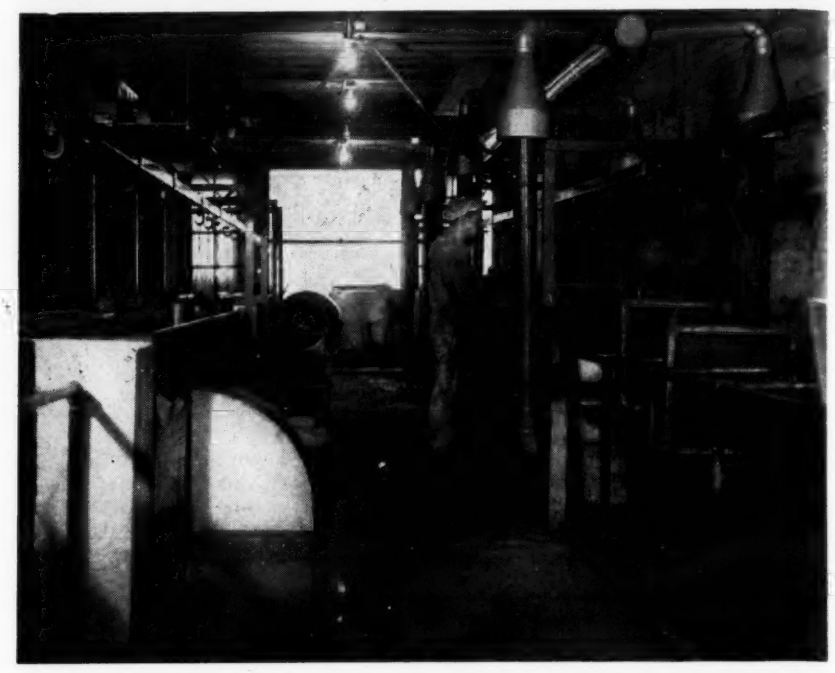
Our close acquaintanceship with the customers' filter installations enables us, at times, to make definite suggestions relating to possible improvements. For instance, we have frequently found that, due to lack of uniformity in the size of filter-holding frames, there is bypassing of air between the filter-enclosing channel or frame, the holding frame itself. Consequently, dirt is carried into the ducts and from there into the customers' showroom, offices, etc.

It is not difficult to correct the bypassing, and after this is done, the discharge of dirt is eliminated, thus ending the accumulation of dirt around grilles, and on walls and ceilings.

Prompt service is an important factor in our Air Filter Laundry. Rather than deprive a customer of the use of his filters, for even a brief period, we provide him with filters, unless he already has spare filters. We take the filters to his establishment and have them installed before we pick up the dirty filters.

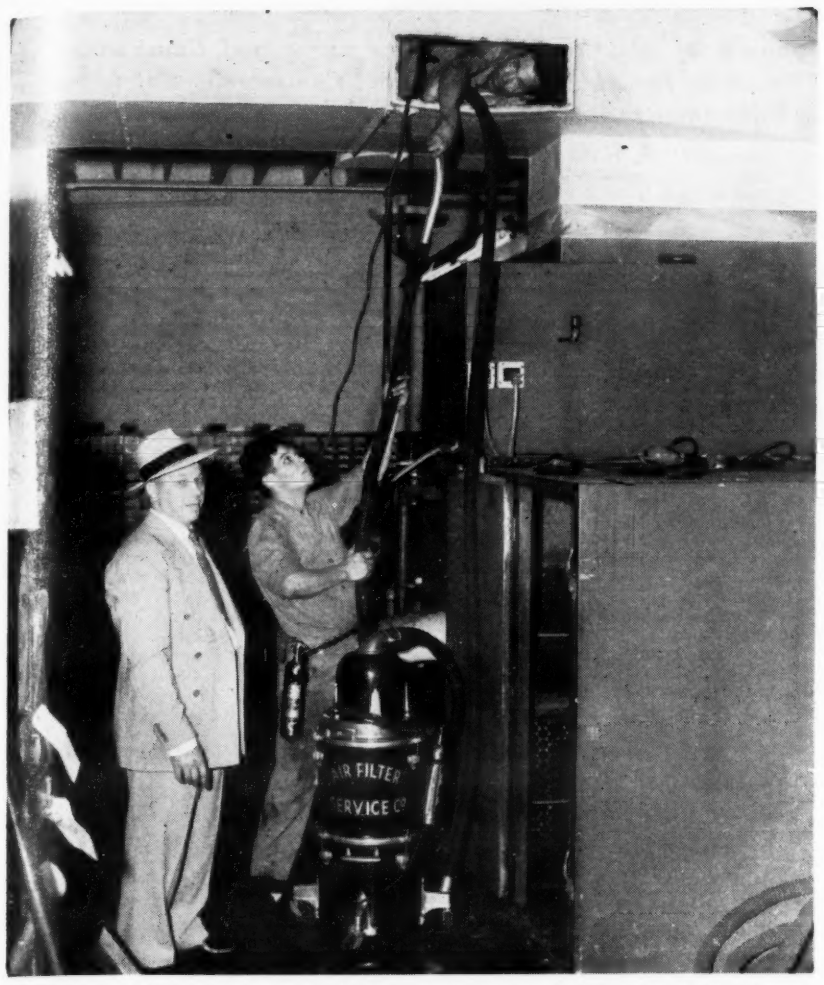
Many of our larger customers send filters to us for cleaning from points as far away as 125 or 130 miles.

Operations In Filter Cleaning Establishment



Air filters carried on a conveyor system in the Frank D. Crew Co. plant pass through tanks containing special caustic solution for removal of dirt and grease, thence through clean, hot water tanks, and finally through a drying chamber.

Solving the Duct-Cleaning Problem



Here is another factor in maintenance of air cleaning facilities in air conditioning systems. The Air Filter Service Co. of St. Louis uses a crew which includes some midgets, and special apparatus, to clean ductwork.

* * *

ST. LOUIS—Air Filter Service Co. here, air conditioning service firm which specializes in cleaning of ducts in comparatively inaccessible locations, traces much of its work volume during the last four years to the fact that four midgets are on the company payroll.

Ben Misbauer, head of the firm, was unable to contract for many air conditioning renovation jobs when he went into business six years ago—simply because there was no way of "getting at it." This situation went on until he hit upon the idea of employing extremely small-sized men, who could get into spaces measured in inches to do a thorough cleaning or repair job.

There are two crews of two midgets each on the company's staff, all four averaging less than 100 lbs. of weight, although slightly larger than the circus variety of midget. Each is small enough to crawl through standard flat air conditioning ducts, to clean them out, make adjustments, install new controls, etc. Since using them, Air Filter Service has been able to take on almost every type of renovation work.

The midgets are paid $1.25 an hour, good compensation being indicated due to the dangerous nature of some of the work. At times, the men are required to crawl through 150 or 200 ft. ducts, pulling vacuum hoses and nozzles with them. Each man carries a fire extinguisher, inasmuch as fire caused by dust particles and overheating is their principal hazard. One man was recently caught while cleaning duct work in a 150 ft. duct which suddenly leaped into flame. His handy fire extinguisher saved him from serious injury, however.

Jobs run up to 3,000 ft. of ductwork to be cleaned in this way, according to Mr. Misbauer. Before going on the job, every man is X-rayed to ferret out any possible tuberculor diseases, silicosis, or lung injuries.

"Sanitation of this type works two ways," Mr. Misbauer said. "We are not only interested in the health of our men, but seeing that the inside of the air conditioning ducts are as clean as possible."

After vacuum cleaning the inside of the ducts, the midgets go through with a chemical powder which destroys bacteria, cleans out insect deposits, etc. Much publicity has been attached to almost every job the firm has turned out, according to Mr. Misbauer. Incidentally, he has a long list of trainees from "miniature men" interested in getting on the company payroll.

Household Air Cleaner Is Now Available

Pictured above is the recently introduced Westinghouse household model "Precipitron," an electrostatic air cleaner. While this method of air cleaning in air conditioning systems has certain recognized advantages, the matter of cost is a factor. The above household model sells for $420 plus installation cost. Commercial size models are correspondingly higher. There is also the matter of maintenance and operating costs, on which little information is available at present, but which might constitute quite a factor.

Not until such figures are collected and analyzed will it be possible to make accurate comparisons on a cost basis with other air cleaning methods.

Air Conditioning & Commercial Refrigeration Shipments for First Half of '46

New Bureau of Census Report Provides Information on Unit Sales by Quarters

WASHINGTON, D. C.—The report just issued by the Bureau of Census of the U. S. Department of Commerce covering shipments of Air Conditioning & Commercial Refrigeration Equipment for the first and second quarters of 1946 is the first release of this type covering quarterly data.

Previous releases covered annual and semi-annual periods. Heretofore, all reports in Series M52A included information for two types of equipment:

(1) Commercial Refrigeration Unitary Equipment

(2) Air Conditioning Equipment and Components and Accessories for Air Conditioning and Commercial Refrigeration Equipment.

In the quarterly release, however, only air conditioning equipment, and components and accessories for air conditioning and commercial refrigeration equipment, as compiled from Part II of Census Form M52A are included.

Data on commercial refrigeration unitary equipment, except farm freezers, will be presented annually. Farm freezer shipments will be shown on a quarterly basis in an early release which also will include statistics on home freezers.

The statistics in this report cover all types of air conditioning equipment and components and accessories normally sold as standard items. In addition, certain types of railroad air conditioning and self-contained refrigeration units for trucks and trailers, as well as absorption systems, have been included in the release in the category of miscellaneous air conditioning and refrigeration equipment.

The release giving information for the first and second quarters of 1946 is based on reports submitted by 71 manufacturers, 8 more than the 63 manufacturers included in the corresponding section in the survey for the period July through December, 1945. Of the 71 companies included in the report, estimates were made for a few companies, representing a small portion of the total industry, that did not submit their reports in time to be tabulated.

Table 1 presents summary data on domestic and export shipments. Tables 3 and 4 cover detailed information for the first two quarters.

The shipments statistics included in the report apply to equipment actually billed and shipped during the first and second quarters of 1946. These figures are equivalent to completed sales. Complete units delivered on consignment or shipped to a branch warehouse for stock are not included. The dollar values shown are the manufacturer's net billing price, f.o.b., factory.

The dollar value of all shipments rose 24% from $40 million in the period July through December, 1945 to almost $50 dollars in the first half of 1946. This increase was due primarily to the sharp rise in the shipments of heat exchanger equipment which increased 49%.

Shipments of Air Conditioning Equipment and Components and Accessories for Air Conditioning and Commercial Refrigeration Equipment: Summary by Major Class, First Half and Second Half of 1945 and First Half of 1946

Product	Shipments of Complete Units: January-June 1946 No.	January-June 1946 Value (dollars)	July-December 1945 No.	July-December 1945 Value (dollars)	January-June 1945 No.	January-June 1945 Value (dollars)
Total	*	**49,823,719**	*	**40,331,825**	*	**31,563,882**
Condensing units	303,048	21,937,641	222,901	19,963,353	131,500	16,938,567
Ammonia refrigerants	832	815,022	820	951,871	965	1,550,786
Refrigerants except ammonia	302,216	21,122,619	222,081	19,011,482	130,535	15,387,781
Air cooled	286,030	16,149,433	206,851	12,888,128	120,180	10,490,167
Water cooled	16,186	4,973,186	15,230	6,123,354	10,355	4,897,614
Compressors and compressor units	78,446	6,801,246	55,464	5,880,390	51,876	3,697,969
Ammonia refrigerants	1,694	2,853,415	1,988	3,261,573	1,223	1,797,424
Refrigerants except ammonia	76,752	3,947,831	53,476	2,618,817	50,653	1,900,545
Centrifugal refrigeration machines	145	2,941,362	151	2,292,873	34	700,619
Heat exchanger equipment	*	18,143,470	*	12,195,209	*	10,226,727
Evaporative condensers	2,232	2,264,463	1,775	1,758,386	1,110	1,070,291
Unit coolers	87,889	8,026,206	51,647	6,085,612	39,356	4,100,945
Air conditioning	2,928	1,642,139	2,133	1,162,024	717	322,947
Refrigeration	84,961	6,384,067	49,514	4,923,588	38,639	3,777,998
Other heat exchanger equipment†	*	7,852,801	*	4,351,211	*	5,055,491

Note: This symbol "*" denotes not applicable. †Includes condensers and liquid coolers of shell and tube and shell and coil types, as well as fin coils (heating and cooling) and plate type evaporators.

Table 1—Air Conditioning Equipment and Components and Accessories for Air Conditioning and Commercial Refrigeration Equipment: Summary of Shipments by Major Class of Product, First and Second Quarters 1946

Product	First Quarter 1946 Shipments of Complete Units: Total No.	Total Value (dollars)	Domestic† No.	Domestic† Value (dollars)	Export‡ No.	Export‡ Value (dollars)
Section I—Components and Accessories						
Total	*	**22,514,479**	*	**21,529,271**	*	**985,208**
Condensing units	136,594	9,584,757	131,410	9,110,120	5,184	474,637
Ammonia refrigerants	485	453,847	437	406,083	48	47,764
Refrigerants except ammonia	136,109	9,130,910	130,973	8,704,037	5,136	426,873
Air cooled	128,871	7,038,767	124,026	6,681,035	4,845	357,732
Water cooled	7,238	2,092,143	6,947	2,023,002	291	69,141
Compressors and compressor units	30,264	3,353,035	27,376	3,117,406	2,888	235,629
Ammonia refrigerants	979	1,651,096	847	1,499,501	132	151,595
Refrigerants except ammonia	29,285	1,701,939	26,529	1,617,905	2,756	84,034
Centrifugal refrigeration machines	67	1,358,758	65	1,328,818	2	29,940
Heat exchanger equipment	*	8,217,929	*	7,972,927	*	245,002
Evaporative condensers	1,022	1,033,279	960	986,921	62	46,358
Unit coolers	39,671	3,838,175	39,156	3,719,066	515	119,109
Air conditioning	1,402	830,355	1,365	814,536	37	15,819
Refrigeration	38,269	3,007,820	37,791	2,904,530	478	103,290
Other heat exchanger equipment§	*	3,346,475	*	3,266,940	*	79,535
Section II—Self-Contained Air Conditioning Units and Absorption Systems						
Self-contained air conditioning units						
Store type	3,812	2,616,990	3,675	2,537,815	137	79,175
Room type	‖	‖	‖	‖	‖	‖
Miscellaneous air conditioning and refrigeration equipment, including absorption systems	*	387,895	*	374,746	*	13,149

Product	Second Quarter 1946 Shipments of Complete Units: Total No.	Total Value (dollars)	Domestic† No.	Domestic† Value (dollars)	Export‡ No.	Export‡ Value (dollars)
Section I—Components and Accessories						
Total	*	**27,309,240**	*	**25,746,332**	*	**1,562,908**
Condensing units	166,454	12,352,884	158,643	11,583,185	7,811	769,699
Ammonia refrigerants	347	361,175	321	331,201	26	29,974
Refrigerants except ammonia	166,107	11,991,709	158,322	11,251,984	7,785	739,725
Air cooled	157,159	9,110,666	149,823	8,474,843	7,336	635,823
Water cooled	8,948	2,881,043	8,499	2,777,141	449	103,902
Compressors and compressor units	48,182	3,448,211	42,021	3,098,767	6,161	349,444
Ammonia refrigerants	715	1,202,319	602	1,017,701	113	184,618
Refrigerants except ammonia	47,467	2,245,892	41,419	2,081,066	6,048	164,826
Centrifugal refrigeration machines	78	1,582,604	71	1,467,040	7	115,564
Heat exchanger equipment	*	9,925,541	*	9,597,340	*	328,201
Evaporative condensers	1,210	1,231,184	1,091	1,105,351	119	125,833
Unit coolers	48,218	4,188,031	47,839	4,093,211	379	94,820
Air conditioning	1,526	811,784	1,488	796,223	38	15,561
Refrigeration	46,692	3,376,247	46,351	3,296,988	341	79,259
Other heat exchanger equipment§	*	4,506,326	*	4,398,778	*	107,548
Section II—Self-Contained Air Conditioning Units and Absorption Systems						
Self-contained air conditioning units						
Store type	3,657	2,576,376	3,581	2,540,386	76	35,990
Room type	‖	‖	‖	‖	‖	‖
Miscellaneous air conditioning and refrigeration equipment, including absorption systems	*	916,151	*	911,264	*	4,887

Note: The symbol "*" denotes not applicable. †Continental United States. ‡Includes Canada, Mexico, and United States territories. §Includes condensers and liquid coolers, shell and tube and shell and coil types, as well as fin coils (heating and cooling) and plate type evaporators. ‖Data on shipments of room type air conditioning units combined as follows for first and second quarters, to avoid disclosure of operations of individual companies: Total—2,486 units, $660,379; Domestic—2,073 units, $563,814; Export—413 units, $96,565.

Table 3—Air Conditioning Equipment and Components and Accessories for Air Conditioning and Commercial Refrigeration Equipment: Shipments by Type of Product, First Quarter 1946

Product	Production of Units Incorporated In Unitary Equipment Made in Same Plant	Shipments of Complete Units — Total No.	Total Value (dollars)	Domestic† No.	Domestic† Value (dollars)	Export‡ No.	Export‡ Value (dollars)	No. of Plants Reporting
Section I—Components and Accessories								
Total	*	*	22,514,479	*	21,529,271	*	985,208	71
Condensing Units, Total	*	136,594	9,584,757	131,410	9,110,120	5,184	474,637	34
Refrigerants, except ammonia, total	20,737	136,109	9,130,910	130,973	8,704,037	5,136	426,873	31
Air cooled, total	19,830	128,871	7,038,767	124,026	6,681,035	4,845	357,732	30
⅓ hp. and under	3,974	36,772	931,983	35,697	920,781	1,075	11,202	10
¼ hp.	12,025	27,734	1,193,704	26,922	1,156,005	812	37,699	26
⅓ hp.	1,463	33,770	1,737,770	32,834	1,679,080	936	58,690	27
½ hp.		16,015	1,134,395	15,149	1,058,863	866	75,532	26
¾ hp.		5,875	624,546	5,456	577,353	419	47,193	26
1 hp.	§2,368	3,990	519,416	3,606	466,009	384	53,407	24
1½ hp.		2,018	354,513	1,871	327,077	147	27,436	20
2 hp.		1,971	371,056	1,811	336,415	160	34,641	22
3 and 5 hp.§		726	171,384	680	159,452	46	11,932	13
Water cooled, total	907	7,238	2,092,143	6,947	2,023,002	291	69,141	25
⅓ hp. and under§		201	15,725	193	14,984	8	741	6
½ hp.		485	47,304	479	46,702	6	602	13
¾ hp.	§414	601	67,208	576	64,613	25	2,595	15
1 hp.		934	131,269	907	127,184	27	4,085	18
1½ hp.		723	126,583	674	119,891	49	6,692	19
2 hp.		1,015	211,048	992	206,204	23	4,844	21
3 hp.		1,475	392,406	1,396	369,886	79	22,520	23
5 hp.		1,001	348,467	948	339,751	53	8,716	17
7½ hp.		313	227,486	304	222,238	9	5,248	14
10 hp.		218	140,868	212	137,877	6	2,991	12
15 hp.	§493	138	128,704	136	127,145	2	1,559	11
20 hp.		19	24,608	18	23,246	1	1,362	7
25 hp.		39	53,826	39	53,826	¶	¶	3
30 hp.		18	31,518	18	31,518	¶	¶	5
40 hp.		23	46,825	22	45,710	1	1,115	5
50 hp and over§.		35	98,298	33	92,227	2	6,071	5
Ammonia refrigerants reciprocating, water cooled, total	*	485	453,847	437	406,083	48	47,764	10
Under 3 hp.	*	22	8,919	22	8,919	¶	¶	5
3 hp.	*	11	5,076	11	5,076	¶	¶	4
5 hp.	*	117	66,820	108	61,056	9	5,764	8
7½ hp.	*	52	39,538	46	35,341	6	4,197	5
10 hp.	*	115	100,621	103	90,168	12	10,453	6
15 hp.	*	68	74,650	57	61,174	11	13,476	5
20 hp.	*	51	67,922	44	59,878	7	8,044	4
25 hp. and over§.	*	49	90,301	46	84,471	3	5,830	4

Product	Shipments of Complete Units — Total No.	Total Value (dollars)	Domestic† No.	Domestic† Value (dollars)	Export‡ No.	Export‡ Value (dollars)	No. of Plants Reporting
Section I—Components and Accessories							
Compressors and compressor units, total	30,264	3,353,035	27,376	3,117,406	2,888	235,629	23
Refrigerants except ammonia, total	29,285	1,701,939	26,529	1,617,905	2,756	84,034	19
¼ hp. and under§	13,996	218,806	12,484	199,488	1,512	19,318	9
⅓ hp.	5,899	123,353	5,466	117,535	433	5,818	7
½ hp.	3,189	102,330	2,714	93,092	475	9,238	8
¾ hp.	2,298	86,128	2,129	80,948	169	5,180	10
1 hp.	440	35,841	424	35,044	16	797	8
1½ hp.	428	28,501	415	27,722	13	779	6
2 and 3 hp.§	1,779	128,872	1,694	122,767	85	6,105	13
5 hp.	251	60,397	238	57,264	13	3,133	12
7½ hp.	132	59,462	129	58,222	3	1,240	8
10 hp.	227	106,829	221	104,127	6	2,702	11
15 hp.	189	123,024	180	117,811	9	5,213	9
20 hp.	123	97,563	115	92,276	8	5,287	6
25 hp.	71	65,337	70	64,499	1	838	6
30 hp.	29	36,681	28	35,885	1	796	5
40 hp.	121	182,502	113	171,234	8	11,268	5
50 hp.	71	146,274	71	146,274	¶	¶	5
60 hp.	26	53,537	26	53,537	¶	¶	4
75 hp. and over§	16	46,502	12	40,180	4	6,322	3
Ammonia refrigerants, total	979	1,651,096	847	1,499,501	132	151,595	9
3 hp. and under§	28	6,322	19	4,267	9	2,055	4
5 and 7½ hp.	87	34,617	60	25,144	27	9,473	5
10 hp.	100	53,709	89	47,944	11	5,765	6
15 hp.	111	79,046	95	68,115	16	10,931	7
20 hp.	104	85,731	93	74,692	11	11,039	5
25 hp.	89	99,039	77	87,424	12	11,615	5
30 hp.	105	155,950	97	145,342	8	10,608	6
40 hp.	97	166,115	84	145,285	13	20,830	5
50 hp.	69	133,392	60	117,639	9	15,753	4
60 hp.	38	110,747	38	110,747	¶	¶	5
75 hp.	48	146,310	39	125,847	9	20,463	5
100 hp.	22	94,321	20	83,301	2	11,020	5
101 to 200 hp.	71	394,644	67	380,746	4	13,898	3
201 hp. and over§	10	91,153	9	83,008	1	8,145	4
Centrifugal refrigeration machines (water and brine chilling), total	67	1,358,758	65	1,328,818	2	29,940	4

Pittsburgh Contractors Affiliate with N.A.R.C.

CLEVELAND — The Refrigeration and Air Conditioning Contractors Association of Pittsburgh, with 14 member companies, is the eighteenth organization to affiliate with the National Association of Refrigeration Contractors.

This membership, together with the NARC full company members, makes a total of 850 member companies in 38 states, the District of Columbia, and the Panama Canal Zone.

Officers of the Pittsburgh group are Robert B. Weston, president; H. A. Alexander, vice president; and W. D. Armour, secretary-treasurer.

The association holds regular meetings to maintain a close cooperation between the members on problems of common interest.

Kansas City Trucking Firm To Air Condition Offices

KANSAS CITY, Mo. — The new general office building of Riss & Co., Kansas City truck line operating in 22 states, a one-story structure 70 x 100 ft. now being constructed on a 6½ acre site adjacent to a terminal dock, will be completely air conditioned.

In addition to office space, the building will include restaurant facilities, shower and locker rooms, and a sleeping loft for drivers, all air conditioned to equalize the hot summer temperatures and freezing winter weather to which the location is subjected.

Jordon to Hold Annual Factory Sales Convention In Philadelphia Feb. 14

PHILADELPHIA—Jordon Refrigerator Co.'s annual factory sales convention, to be held here Feb. 14 and 15, will feature its new "Freezewall," "Freezeshelf," and "Climatic Conditioning," the company revealed recently.

The sales meeting will start with luncheon and the showing of new models at the Penn-Sheraton hotel, to be followed by sales meetings and conducted trips through the new and enlarged Jordon plant.

Albert Fogel, vice president and sales manager, says, "many new pieces of automatic equipment have been installed, and Jordon is now rolling into full production."

Freezewall and Freezeshelf are two coil construction improvements, said to speed and intensify freezing action in Jordon frozen food cases and farm freezers, and provide a frozen food storage and freezing compartment in their reach-ins.

Glycerine-Glue Fluid Used to Clean Filters

NEW YORK CITY—Claimed to be an efficient moistening fluid for filter bases employed in air conditioning and heating system, a glycerine-glue solution can be prepared quite easily, according to the Glycerine Producers' Association here.

The product comprises a 50% solution of glycerine and water to which is added about 0.2% of glue. To make the solution, the glue is soaked overnight in a small amount of the glycerine solution, and the swollen glue is then dissolved in the remainder of the glycerine solution. It can be applied to the filters by spraying or dipping.

Cleaning of the filters is performed easily, it is claimed, because the glycerine-glue solution is readily removed by immersion in or spraying with either warm or cold water. After washing, the filters are again coated with the solution.

Table 3 (Cont.)—Air Conditioning Equipment and Components And Accessories for Air Conditioning and Commercial Refrigeration Equipment: Shipments by Type of Product, First Quarter 1946

Product	Shipments of Complete Units: Total No.	Total Value (dollars)	Domestic† No.	Domestic† Value (dollars)	Export‡ No.	Export‡ Value (dollars)	No. of Plants Reporting
Heat exchanger equipment, total	*	**8,217,929**	*	**7,972,927**	*	**245,002**	37
Evaporative condensers, total	1,022	1,033,279	960	986,921	62	46,358	20
Less than 3 tons	18	3,757	18	3,757	¶	¶	4
3 to 5 tons	123	30,961	112	28,156	11	2,805	8
5.1 to 7.5 tons	83	37,530	70	30,908	13	6,622	10
7.6 to 10 tons	61	35,921	60	35,360	1	561	13
10.0 to 15 tons	144	89,593	140	86,874	4	2,719	14
15.1 to 20 tons	50	41,496	46	38,423	4	3,073	15
20.1 to 30 tons	184	180,842	172	175,070	12	5,772	13
30.1 to 50 tons	215	259,684	200	242,919	15	16,765	13
50.1 to 100 tons	121	258,956	119	250,915	2	8,041	13
Over 100 tons	23	94,539	23	94,539	¶	¶	6
Unit coolers, total	39,671	3,838,175	39,156	3,719,666	515	119,109	36
Air conditioning (remote type), total	1,402	830,355	1,365	814,536	37	15,819	18
Less than 3 tons§	130	26,000	130	26,000	¶	¶	6
3.1 to 5 tons	154	47,210	148	45,849	6	1,361	10
5.1 to 10 tons	288	118,437	275	114,818	13	3,619	13
10.1 to 25 tons	585	360,785	572	353,682	13	7,103	15
25.1 to 50 tons	245	277,923	240	274,187	5	3,736	8
Refrigeration, total	38,269	3,007,820	37,791	2,904,530	478	103,290	31
Ceiling and wall mounted, total	37,070	1,990,198	36,688	1,966,959	382	23,239	28
2,000 B.t.u./hr. and under§	8,465	306,124	8,405	303,840	60	2,284	14
2,001-4,000 B.t.u./hr.	7,567	252,811	7,515	250,967	52	1,844	20
4,001-6,000 B.t.u./hr.	4,601	206,730	4,508	202,192	93	4,538	21
6,001-8,000 B.t.u./hr.	3,629	206,988	3,572	203,164	57	3,824	19
8,001 to 12,000 B.t.u./hr.	4,624	287,659	4,564	282,825	60	4,834	20
12,001 to 18,000 B.t.u./hr.	5,079	345,742	5,031	341,506	48	4,236	20
Over 18,000 B.t.u./hr.	3,105	384,144	3,093	382,465	12	1,679	15
Floor mounted—dry type, total	887	611,836	825	568,001	62	43,835	17
Under 2 ton	20	5,939	20	5,939	¶	¶	4
2 to 5 tons	396	188,666	380	181,845	16	6,821	13
5.1 to 7.5 tons	270	194,735	244	172,066	26	22,669	12
7.6 to 10 tons	87	119,371	87	119,371	¶	¶	8
10.1 to 15 tons	95	73,989	75	59,644	20	14,345	9
Over 15 tons	19	29,136	19	29,136	¶	¶	5
Floor mounted—spray type, total	312	405,786	278	369,570	34	36,216	17
Under 5 tons§	26	17,177	21	13,090	5	4,087	13
5.1 to 7.5 tons	121	175,744	117	172,589	4	3,155	12
7.6 to 10 tons	21	24,069	21	24,069	¶	¶	8
10.1 to 15 tons	80	100,315	56	72,147	24	28,168	9
Over 15 tons	64	88,481	63	87,675	1	806	5
Other heat exchanger equipment, total	*	3,346,475	*	3,266,940	*	79,535	33
Condensers, shell and tube and shell and coil	*	535,311	*	506,838	*	28,473	14
Liquid coolers, shell and tube and shell and coil	*	128,076	*	122,191	*	5,885	11
Fin coils—heating, other than forced air units	*	720,110	*	720,110	*	¶	10
Fin coils—cooling, other than forced air units	*	937,369	*	933,793	*	3,576	19
Evaporators, plate type	*	1,025,609	*	984,008	*	41,601	8
Section II—Self-Contained Air Conditioning Units and Absorption Systems							
Self-contained air conditioning units							
Store type, total	3,812	2,616,990	3,675	2,537,815	137	79,175	10
2 and 3 tons§	1,164	594,718	1,074	558,693	90	36,025	8
5 tons	2,456	1,661,839	2,418	1,636,941	38	24,898	6
7.5 tons	59	72,317	59	72,317	¶	¶	4
10 and 15 tons§	107	201,945	98	183,693	9	18,252	3
20 tons and over§	26	86,171	26	86,171	¶	¶	3
Room type	‖	‖	‖	‖	‖	‖	3
Miscellaneous air conditioning and refrigeration equipment, including absorption systems	*	387,895	*	374,746	*	13,149	10

Note: The symbol "¶" denotes zero. The symbol "*" denotes not applicable. †Continental United States. ‡Includes Canada, Mexico, and United States territories. §Combined to avoid disclosure of operations of individual companies. ‖Data on shipments of room type air conditioning units combined as follows for first and second quarters, to avoid disclosure of operations of individual companies: Total—2,486 units, $660,379; Domestic—2,073 units, $563,814; Export—413 units, $96,565.

Table 4—Air Conditioning and Components and Accessories for Air Conditioning and Commercial Refrigeration Equipment: Shipments by Type of Product, Second Quarter 1946

Product	Production of Units Incorporated In Unitary Equipment Made in Same Plant	Shipments of Complete Units: Total No.	Total Value (dollars)	Domestic† No.	Domestic† Value (dollars)	Export‡ No.	Export‡ Value (dollars)	No. of Plants Reporting
Section I—Components and Accessories								
Total	*	*	**27,309,240**	*	**25,746,332**	*	**1,562,908**	71
Condensing units, total	*	**166,454**	**12,352,884**	**158,643**	**11,583,185**	**7,811**	**769,699**	33
Refrigerants except ammonia, total	38,056	166,107	11,991,709	158,322	11,251,984	7,785	739,725	31
Air cooled, total	36,767	157,159	9,110,666	149,823	8,474,843	7,336	635,823	30
⅛ hp. and under	9,633	45,229	1,247,669	44,344	1,213,272	885	34,397	11
¼ hp.	21,910	32,072	1,528,347	29,987	1,414,945	2,085	113,402	25
⅓ hp.	2,656	43,170	2,342,372	41,409	2,219,658	1,761	122,714	25
½ hp.	2,291	20,389	1,466,011	19,215	1,356,937	1,174	109,074	26
¾ hp.		6,876	837,570	6,285	766,373	591	71,197	26
1 hp.		4,045	561,231	3,610	495,446	435	65,785	23
1½ hp.	§277	2,131	363,968	1,974	334,807	157	29,161	22
2 hp.		1,900	382,188	1,781	355,314	119	26,874	20
3 and 5 hp.§		1,347	381,310	1,218	318,091	129	63,219	14
Water cooled, total	1,289	8,948	2,881,043	8,499	2,777,141	449	103,902	25
½ hp. & under§		1,023	100,691	969	95,896	54	4,795	13
¾ hp.		892	117,727	867	114,991	25	2,736	14
1 hp.		1,424	215,733	1,341	204,145	83	11,588	18
1½ hp.		865	172,560	820	165,240	45	7,320	20
2 hp.		1,075	261,905	971	236,406	104	25,499	19
3 hp.		1,614	450,627	1,549	432,108	65	18,519	23
5 hp.		1,040	418,432	981	395,312	59	23,120	20
7½ hp.	§1,289	363	346,528	358	343,463	5	3,065	16
10 hp.		238	164,219	237	163,527	1	692	13
15 hp.		236	233,732	229	227,847	7	5,885	11
20 hp.		43	53,435	42	52,752	1	683	9
25 hp.		38	51,421	38	51,421	¶	¶	6
30 hp.		15	23,378	15	23,378	¶	¶	6
40 hp.		26	53,761	26	53,761	¶	¶	5
50 hp. and over§		56	216,894	56	216,894	¶	¶	
Ammonia refrigerants. Reciprocating water cooled, total	*	347	361,175	321	331,201	26	29,974	10
3 hp. & under§	*	37	18,170	35	17,355	2	815	6
5 hp.	*	62	38,371	58	35,805	4	2,566	9
7½ hp.	*	61	51,019	54	46,338	7	4,681	4
10 hp.	*	106	99,141	105	98,194	1	947	8
15 hp.	*	35	44,173	29	36,799	6	7,374	5
20 hp. and over§	*	46	110,301	40	96,710	6	13,591	6

Table 4 (Cont.)—Air Conditioning Equipment and Components And Accessories for Air Conditioning and Commercial Refrigeration Equipment: Shipments by Type of Product, Second Quarter 1946

Product	Shipments of Complete Units — Total No.	Total Value (dollars)	Domestic† No.	Domestic† Value (dollars)	Export‡ No.	Export‡ Value (dollars)	No. of Plants Reporting
Compressors and compressor units, total	**48,182**	**3,448,211**	**42,021**	**3,098,767**	**6,161**	**349,444**	**24**
Refrigerants except ammonia, total	47,467	2,245,892	41,419	2,081,066	6,048	164,826	21
½ hp. and under§	39,114	757,526	33,434	673,266	5,680	84,260	11
¾ hp.	2,351	96,875	2,272	94,155	79	2,720	9
1 hp.	1,010	57,108	957	54,543	53	2,565	13
1½ hp.	101	15,432	101	15,432	....	....	4
2 and 3 hp.§	2,933	190,435	2,773	178,442	160	11,993	16
5 hp.	1,003	148,834	989	144,976	14	3,858	14
7½ hp.	145	65,667	137	61,977	8	3,690	9
10 hp.	129	69,412	119	64,632	10	4,780	10
15 hp.	192	121,500	187	118,994	5	2,506	10
20 hp.	135	110,328	126	103,806	9	6,522	9
25 hp.	63	71,243	61	68,251	2	2,992	6
30 hp.	42	51,711	32	43,039	10	8,672	6
40 hp.	109	177,378	106	173,139	3	4,239	6
50 hp.	84	166,619	72	146,308	12	20,311	5
60 hp. and over§	56	145,824	53	140,106	3	5,718	6
Ammonia refrigerants, total	715	1,202,319	602	1,017,701	113	184,618	10
7½ hp. and under§	149	64,069	132	56,962	17	7,107	6
10 hp.	43	22,486	40	20,467	3	2,019	5
15 hp.	69	56,983	48	42,084	21	14,899	7
20 hp.	78	65,151	74	61,549	4	3,602	5
25 hp.	65	73,437	53	60,433	12	13,004	5
30 hp.	66	96,760	55	81,813	11	14,947	5
40 hp.	45	80,193	45	80,193	¶	¶	5
50 hp.	53	109,084	42	89,389	11	19,695	3
60 hp.	26	63,477	15	41,599	11	21,878	4
75 hp.	36	112,822	27	89,440	9	23,382	3
100 hp.	38	134,755	28	92,414	10	42,341	5
101 hp. and over§	47	323,102	43	301,358	4	21,744	3
Centrifugal refrigeration machines (water and brine chilling), total§	**78**	**1,582,604**	**71**	**1,467,040**	**7**	**115,564**	**4**
Heat exchanger equipment, total	*	**9,925,541**	*	**9,597,340**	*	**328,201**	**47**
Evaporating condensers, total	1,210	1,231,184	1,091	1,105,351	119	125,833	21
Less than 3 tons	21	3,635	21	3,635	¶	¶	4
3 to 5 tons	120	31,947	111	29,717	9	2,230	10
5.1 to 7.5 tons	130	56,168	104	45,140	26	11,028	15
7.6 to 10 tons	99	53,270	95	51,270	4	2,000	15
10.1 to 15 tons	162	97,058	155	92,916	7	4,142	14
15.1 to 20 tons	64	51,217	58	46,803	6	4,414	14
20.1 to 30 tons	201	197,975	183	186,644	18	11,331	16
30.1 to 50 tons	252	321,433	227	291,418	25	30,015	15
50.1 to 100 tons	141	336,886	124	299,686	17	37,200	15
Over 100 tons	20	81,595	13	58,122	7	23,473	5
Unit coolers, total	48,218	4,188,031	47,839	4,093,211	379	94,820	35
Air conditioning remote type, total	1,526	811,784	1,488	796,223	38	15,561	20
3 tons and under§	184	33,957	184	33,957	¶	¶	7
3.1 to 5 tons	196	56,361	189	54,908	7	1,453	12
5.1 to 10 tons	318	125,352	306	122,004	12	3,348	16
10.1 to 25 tons	619	374,957	604	367,329	15	7,628	17
Over 25 tons§	209	221,157	205	218,025	4	3,132	8
Refrigeration, total	46,692	3,376,247	46,351	3,296,988	341	79,259	31
Ceiling and wall mounted, total	45,582	2,376,983	45,305	2,356,247	277	20,736	28
1,000 B.t.u./hr. and under	277	8,172	275	7,949	2	223	6
1,001 to 2,000 B.t.u./hr.	8,430	314,561	8,380	312,981	50	1,580	13
2,001 to 4,000 B.t.u./hr.	11,891	366,099	11,842	364,086	49	2,013	19
4,001 to 6,000 B.t.u./hr.	7,049	313,373	7,032	312,462	17	911	18
6,001 to 8,000 B.t.u./hr.	3,909	229,841	3,889	228,086	20	1,755	20
8,001 to 12,000 B.t.u./hr.	5,390	341,324	5,338	336,788	52	4,536	20
12,001 to 18,000 B.t.u./hr.	4,914	316,552	4,833	307,826	81	8,726	18
Over 18,000 B.t.u./hr.	3,722	487,061	3,716	486,069	6	992	14
Floor mounted dry type, total	816	599,053	769	565,473	47	33,580	17
5 tons and under§	311	128,913	299	123,445	12	5,468	14
5.1 to 7.5 tons	236	168,066	228	163,250	8	4,816	11
7.6 to 10 tons	88	99,307	80	89,074	8	10,233	9
10.1 to 15 tons	125	114,191	106	101,128	19	13,063	10
Over 15 tons	56	88,576	56	88,576	¶	¶	7
Floor mounted spray type, total	294	400,211	277	375,268	17	24,943	10
5 tons and under§	31	21,316	26	16,940	5	4,376	4
5.1 to 7.5 tons	111	169,359	110	168,585	1	774	7
7.6 to 10 tons	37	55,627	31	40,216	6	15,411	7
10.1 to 15 tons	49	58,563	46	56,470	3	2,093	4
Over 15 tons	66	95,346	64	93,057	2	2,289	6
Other heat exchanger equipment, total	*	4,506,326	*	4,398,778	*	107,548	33
Condensers, shell and tube and shell and coil§	*	615,738	*	590,555	*	25,183	14
Liquid coolers, shell and tube	*	135,946	*	121,619	*	14,327	7
Liquid coolers, shell and coil	*	13,704	*	13,678	*	26	4
Fin coils—heating other than forced air units	*	880,850	*	880,730	*	120	11
Fin coils—cooling other than forced air units	*	1,391,786	*	1,368,970	*	22,816	18
Evaporators, plate type	*	1,468,302	*	1,423,226	*	45,076	7
Section II—Self-contained Air Conditioning Units and Absorption Systems							
Self-contained air conditioning units							
Store type	3,657	2,576,376	3,581	2,540,386	76	35,990	11
2 and 3 tons§	998	524,371	984	516,823	14	7,548	9
5 tons	2,479	1,703,630	2,417	1,675,188	62	28,442	7
7.5 tons	85	109,260	85	109,260	¶	¶	4
10 tons and over§	95	239,115	95	239,115	¶	¶	5
Room type	‖	‖	‖	‖	‖	‖	6
Miscellaneous air conditioning and refrigeration equipment, including absorption systems	*	916,151	*	911,264	*	4,887	10

Note: The symbol "¶" denotes zero. The symbol "*" denotes not applicable. †Continental United States. ‡Includes Canada, Mexico, and United States territories. §Combined to avoid disclosure of operations of individual companies. ‖Data on shipments of room type air conditioning units combined as follows for first and second quarters to avoid disclosure of the operations of individual companies: Total—2,486 units, $630,379; Domestic—2,073 units, $563,814; Export—413 units, $96,565.

Plant and Institutional Expansions In Nebraska

LINCOLN, Neb.—A locker plant manufacturing expansion and a major institutional refrigeration installation have been announced for Lincoln in 1947, while the Minden (Neb.) Creamery has just moved into its recently completed addition which provides tripled cold storage space for milk, cream and butter, along with an expanded egg division.

The McGrew Machine Co., 2124 "Y" St., has already taken out a building permit to construct a $10,000 addition to its plant. The firm manufactures cold storage lockers.

Union College of Lincoln will construct a new $175,000 home economics building which has just been approved by the board of trustees, according to Robert W. Woods, president of the college, and the three-story brick structure will house refrigeration facilities for a classroom kitchen and bakery, as well as a dining room to serve students and seat over 600. Air conditioning equipment will be included.

Milk Receiving Station Started on Long Island

SUGAR GROVE, N. Y.—Construction has started here on the $125,000 milk receiving station for the Queensboro Farm Products Co. of Long Island City, which is being erected on property purchased by the company last spring.

New Refrigerators, Freezers, Appliances Shown at Chicago Winter Marts

Philco Plans 2 New Freezers for Spring

Entire line of Philco household refrigerators, one 6 cu. ft., six 7 cu. ft., and three 9-cu. ft. models, were on display. These models are now in production and are being shipped to distributors and dealers, it was announced.

Prices on these models are the same as those recently announced by the company.

In addition, two home freezer models, AH51, 5 cu. ft., priced at $199.50, and AH25, 2½ cu. ft. and priced at $149.50 were shown. Both these models are now said to be in production.

Two new Philco freezers have been announced and are to be in production this spring. Both new models are of upright design and will be produced in 10 cu. ft. and 7½-cu. ft. capacity. Model AV100, 10 cu. ft. and Model AV75, 7½ cu. ft. will have three separate compartments with individual glass door openings.

Upper compartment is designed for sharp freezing, while the two lower compartments will be sub-zero locker storage spaces. Upper compartments of the two new freezers can also be used for additional storage space. Added features of both models are a built-in lock as well as a warning bell.

Editor's Note: On this and the facing page are several additional stories covering the various refrigerators, freezers, and other appliances which department and furniture store buyers saw at the annual Furniture Marts recently held in Chicago.

Full Line of Units Shown by Crosley

Although no immediate change from 1946 household refrigerator models are planned by Crosley Division of Aviation Corp., it was announced that 1948 models are being readied and announcement on construction details and production may be made before the end of this year.

In addition to the 7 ard 9-cu. ft. household refrigerators displayed, the full line of Crosley gas and electric ranges, kitchen cabinets, and sinks were on display.

Introduced for the first time was the new Crosley television receiver which made the bow on the first day of the show. Several important new features include a swivel tube mountting which permits viewing from either right or left.

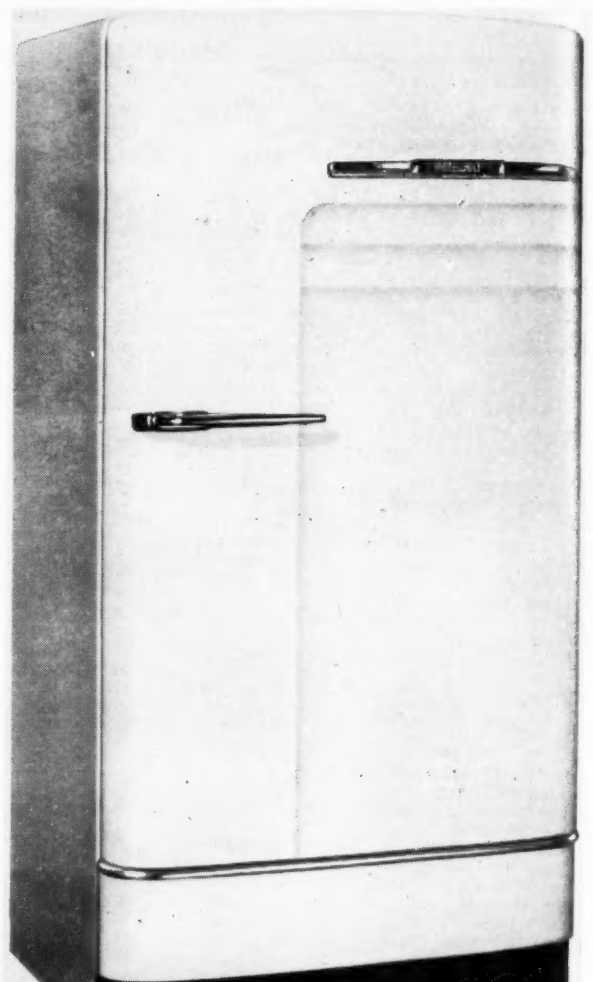
Gibson Pushes Output On 3 Household Boxes

Three models of the Gibson household refrigerator are in production and are now being shipped, according to company announcement. These models are 7.14, 6.73, and 7.21-cu. ft. capacities.

In addition, Gibson is in production on their 6.13-cu. ft. upright home freezer. Production of this model is underway and shipments are being made to distributors and dealers. The freezer construction features shelf-type evaporators for the five separate food compartments. Each compartment has a glass door opening and has a shelf area of 10 sq. ft. Use of the four shelves with extra freezing plate gives this model, HF-616, four fast freezing compartments.

Heading the company's line of electric ranges is the Model ER-197-H which features the "Ups-A-Daisy" two-position burner. Through use of a lift-up cooking element four surface burners can be used. Lower position of this burner gives the range three surface burners plus the conventional deep well cooker. Although this model was announced in July of last year, production has only recently been under way.

Also shown were three conventional electric ranges, Models ER-197-D, ER-197-B, and ER-197-F.



At right is Hotpoint's new deluxe 8 cu. ft. refrigerator (Model EC8-1) in which space is so economically laid out that the company claims this 8 ft. model occupies the same floor space as Hotpoint's former 6 cu. ft. box. The EC8-1 has a freezer capacity of nearly 1 cu. ft., which means that some 31 lbs. of frozen food can be kept at temperatures as low as 13°. Frozen meats can be stored in an extra-large section. Special larger compartments at the bottom keep the fruits and vegetables at maximum humidity. Height of the 8 cu. ft. refrigerator is 60 in.; width, 30 in.; and depth, 29 in. Hotpoint plans to make a similar 10 ft. model soon.

Coolerator Unit Can Be Converted

Something new in the merchandising of the electric refrigerator is offered by Coolerator's "convertible unit" plan which allows the field conversion of the company's 5.25-cu. ft. ice refrigerator to a 7.75-cu. ft. mechanical unit.

Change-over from ice to mechanical is accomplished with only minor cabinet changes and a slightly higher base. The ice compartment is utilized for the evaporator containing ice-cube trays and frozen food storage space.

Produced in a limited quantity last year, Coolerator's 8.5-cu. ft. electric refrigerator is expected to go into production again the middle of the year, a spokesman said. Production of the electric model of the convertible unit, however, is scheduled to get under way in February or March.

Also displayed was the two-compartment, 15.5-cu. ft. farm freezer, which can also be used as a frozen food dispensing case by the insertion of metal merchandising trays. Not now in production but displayed was the company's chest-type 6.5-cu. ft. home freezer which will augment manufacture of the large freezer. This unit is expected to hit the market around June.

Bendix Displays 'Production' Models

At last summer's markets, Bendix Home Appliances showed hand-made models of its automatic home dryer and ironer. At these markets, the company displayed production models, along with the Home Laundry.

Production recently got under way on both the electric and gas models of the dryer and on the deluxe model of the ironer.

Rated capacity of the dryers is given as 18 lbs. of wet clothes. Such a load is said to be ready for ironing in about 45 minutes or for storing in approximately 55 minutes.

The cylinder turns at 50 r.p.m., according to Bendix, and four triangular baffles toss and tumble clothes in cross-cross patterns. Air is forced through the drying cylinder by means of a specially designed centrifugal blower, which turns at 2400 r.p.m. A quarter horsepower motor drives both blower and cylinder.

Bendix claims the ironer combines the best features of the rotary and flat-plate types. A 4 in. clearance between the roll and the shoe is said to make it possible to see the entire face of the shoe.

Production Set for Feb. 1 On New Sanitary Ice Model

Production of its new 5-cu. ft. ice refrigerator will be started by Sanitary Refrigerator Co. on Feb. 1, according to a spokesman. The company now is completing the manufacture of 39,000 old-type ice units for the veterans' housing program.

The new refrigerator, Model 756, is a double-door unit, with an ice capacity of 75 lbs. It is said to re-ice with a 50-lb. block.

Sanitary currently is turning out its 12.5-cu. ft. Quicfrez farm freezer. Sale of the cabinet without the unit is being promoted.

Compact Blackstone Laundry Featured

The counter-height Blackstone "combination laundry" consisting of automatic washer, dryer, and ironer all in matching cabinets, got the spotlight in the Blackstone Corp. space.

While final prices have not been established, the automatic washer carries a tentative price of $270, and the whole ensemble will sell "in the $500-$600 price range," it was stated.

The automatic washer completes its wash, rinse, and damp dry cycle in a minimum of 22½ minutes, using 41 gallons of water. Washing of the clothes is accomplished by the agitator-type action. When the tub drains the dirty soapy water is extracted from the clothes by an "extraction-rinse" action, after which the tub fills with clean water and the laundry is actively rinsed by the "agitator-rinse" principle, with fresh water flowing in and flushing away dirt and lint over the top of the basket.

In the damp-dry operation the spinning action is a 550 r.p.m. to "spin-dry" the clothes.

The dryer is an open-coil type. The roll-type ironer slides out from the cabinet for use, and is operated by button or knee control. Washer cabinet is 25 in. wide, dryer cabinet 29 in. wide, and ironer cabinet 18 in. wide, taking up a total floor width of 6 ft.

'Launderall' Exhibit Shows Driving Mechanism Operation

Operating display of the F. L. Jacobs Co. "Launderall" automatic washer was designed to point up such "Launderall" features as the Re-Verso-Rol action, safety latch on the washer basket, and the Roto-Drier.

A special display setup revealed the operation of the driving mechanism, powered by a Jack & Heintz motor.

American to Produce New Sink, Freezer

Plans to produce a complete electric sink—dishwasher, disposal, and sink combination—and a 4.2-cu. ft. home freezer were reported by a spokesman for American Central Division of Aviation Corp.

The two new appliances, to be offered as feature units in the American line of kitchen work centers, will not be in production until the third and fourth quarters this year, according to present plans. A pre-production model of the electric sink was on display, completely automatic in operation and with a top "window" in the dishwasher as one of the features.

The home freezer, which will have a 30-in. base cabinet, was not on display, but is being designed to be added as a regular section of the American kitchen cabinets, the spokesman said.

Merchandising plan of the company is built around the "Plan-A-Kit" service which allows the purchase of additional units on a monthly-payment basis.

Hamilton Dryer Prices Placed at $229, $244

New retail prices on both the gas and electric Hamilton automatic clothes dryer were announced by W. A. Friedrich, sales manager, home laundry division, Hamilton Mfg. Co.

The 600-E 220-volt (electric model) will retail at $229.50; and the 700-G (gas model) at $244.50. There is no change in the dealer discount.

The electric models have five main parts: a wire screen drum, ⅛-hp. electric motor, electric heating element, automatic timer switch, and thermostatic heat control.

Wet clothes are tossed into the woven wire screen drum, which revolves slowly at 50 r.p.m.

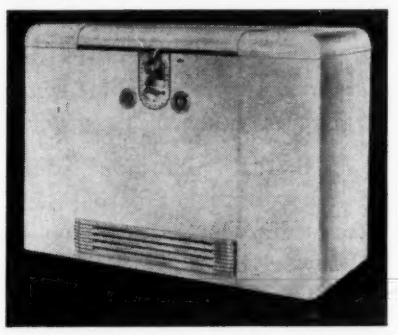
Oscillating Sphere Marks New Speed Queen Washer

Special charted displays outlined the operation of the "Speed Queen" automatic washer manufactured by Barlow & Seeling Co. These demonstrated the following:

The washer basket in the "Speed Queen" is in the form of a sphere which oscillates on a horizontal plane at 144 r.p.m. A vertical fin on the bottom interior of the sphere helps provide the necessary agitation.

A cold water rinse featuring high pressure hydraulic action was also demonstrated. Rinse water is expelled by this same hydraulic action.

10-Ft. Freezer on Amana's Schedule



Powered by a ¼-hp. hermetic unit, this new 10 cu. ft. freezer will be added to the Amana Society's line by the end of January.

* * *

Scheduled to be in production by the end of this month is the Model 110 home freezer announced by the Refrigeration Division of Amana Society. The new unit has been priced at $389.50, it was announced.

The new freezer will have a capacity of 10 cu. ft. and will feature a newly designed control and temperature indicator. It is powered by a ¼-hp. unit.

This new model rounds out the Amana line with a spread of from 5-cu. ft. capacity to 123 cu. ft. The line starts with Model 50, 5 cu. ft., Model 30-R, 30 cu. ft., and Model 200, at the top of the present line with 123 cu. ft.

Deepfreeze Has Baskets For '2-Cylinder' Model

New feature being emphasized by Deepfreeze is a set of wire baskets for the Model B9-46-B.

This model has the two Deepfreeze cylinders, both 30 in. deep. There are three sturdy baskets in the set, which are easily removed, yet fit snugly to the cylinder walls. All kinds of small food packages can be placed in these baskets, which lift out easily individually. The baskets rest on the top of a wire stand, this stand in turn serving as a storage space for bulky roasts, poultry, or larger packages.

The Model B9-46-B (with the wire baskets) offers 9.2 cu. ft. of storage space and lists at $439.50 (Zone 1 prices). The B9-46-B (twin model without the basket), retails at $429.50. Model A4-46, with a 22 in. deep food storage cylinder and 3.66 cu. ft. capacity, lists at $209.95.

Deepfreeze is offering a number of new display helps for dealers, outstanding among which is a "mirrored lid" with a supporting frame, which mirrors a display of food in attractive fashion in the Model A4-46.

Ben-Hur Will Add 18-Ft. Model to Freezer Line

Ben-Hur's line of farm and home freezers will be expanded this spring when production is scheduled to start on an 18-cu. ft. unit similar to the currently manufactured 12.5-cu. ft. freezer, a representative revealed.

The new freezer will be produced in both standard and deluxe models, with the latter equipped with a stainless-steel inner lining. Units will be of ⅓-hp. Like the 12.5-cu. ft. freezer, both of the new models will have separate freezing and storage compartments and two lids.

Ben-Hur now is producing the 12.5-cu. ft. freezer and a 6-cu. ft. unit in standard and deluxe models. Both were on display at the markets.

Prices are unchanged from the last OPA levels, the representative said.

Presteline Keeps Lid on New 'Mystery' Products

The mystery of what new products were unveiled by the Domestic Appliance Division of Pressed Steel Car at a very secretive showing is still a mystery—as far as the general public is concerned. Distributors and dealers got through the curtained entrance to the inner display room only on closely checked passes.

Officials would say only that public announcement of the products probably would not be made before mid-February.

Manages Range Sales

PHILIP W. PUGH
Recently named to manage range sales for the Crosley Division of Aviation Corp.

Dave Tishler Sets Up New Hartford Appliance Outlet

HARTFORD, Conn. — The Cohler Radio & Appliance Co., 423 Main St., is now open for business. The store, occupying 1,600 sq. ft., is owned by Dave Tishler, formerly of Hartford, but now of Bridgeport, where he operates another business of this type. Cohler's will be managed by George DuBrow, well known in the radio and appliance field.

4 More Appliance Stores Prepare to Open In Boise

BOISE, Ida.—At least four new stores emphasizing housewares and appliances have entered the retail scene in Idaho or are readying for official openings, a recent survey revealed.

Home Auto & Supply opened recently at Buhl, with Marion Lowe and Glen King as proprietors.

A Firestone store, owned by Jack Buchholz and Keith and Andrew Redford, has opened in Weiser, while the official opening of another Firestone store at Preston, was held early this month. Smith Allen is owner.

Jorgensen & Jones, owned by Otto Jorgensen and Lewis Jones, will open an appliance store in Rigby.

Cowan Supply Gets Charter To Organize In Atlanta

ATLANTA — The Cowan Supply Co., supply and appliance concern, has been granted a charter.

The new company plans to carry on a general wholesale and supply business, buying, selling, importing, exporting, manufacturing, and dealing in electrical, industrial, heating supplies and hardware, also to deal in house, store, office, and other furniture, carpets, fixtures and furnishing goods, electric and gas cooking, heating and lighting apparatus and other fixtures and supplies.

Incorporators are Charles G. Cowan, Joel W. Clayton, and Alvin Flannes.

What Factors Will Determine Future of the Reverse Cycle Heat Pump?

Electric Utilities See Heat Pump as Wedge For Entering Household Heating Market

Editor's Note: The future of the reverse cycle or "heat pump" method of year-around air conditioning seems at the present time to depend upon two factors: (1) whether or not it can compete from a cost standpoint with other means of heating; (2) how extensively it will be promoted by the electric power companies.

One of the most comprehensive discussions of these two factors to be heard to this date was presented before the annual conference last fall of the International Association of Electrical Leagues, by S. W. Andrews, rate engineer for American Gas & Electric Service Corp.

This discussion describes the program being undertaken by utility companies in some sections of the country to promote the use of the heat pump, and includes an analysis of many of the economic factors involved.

On the pages following this article the NEWS presents detailed descriptions of two of the reverse cycle systems which are now being produced.

NEW YORK CITY—New types of heat pumps now being developed both for heating and cooling and for water heating may prove to be a decisive weapon in the battle between the electric utility industry and its competitors for the household heating market.

A program for the development of these machines grew out of a search for a means of competing with heating by fuels and the resulting decision that the heat pump is "the one device now in prospect which seems to hold out the . . . probability that the electric utility industry can really go after the house heating business."

1,000 Units Ordered

Specifications prepared under the program and sent to seven interested manufacturers called for the production of 1,000 air-to-air and water-to-air heating-cooling units, with deliveries to start July 1, 1948. The pumps would be completely automatic.

As another phase of the same program, specifications also were sent to the same producers for the manufacture of 10,000 heat pump water heaters. Shipments of these single-unit heaters were scheduled to begin Sept. 1, 1947.

The story of this program was related to members of the International Association of Electrical Leagues during their eleventh annual conference by S. W. Andrews, rate engineer for American Gas & Electric Service Corp.

(Despite its name, American Gas & Electric's business is 100% electric utility. In much of the territory where its companies operate, the corporation is in competition with natural gas, in the remainder with artificial gas, and, in suburban and rural territory away from gas lines, with bottled gas.)

"As we look at our domestic market, . . . we find that the toughest single problem facing us is house heating," Mr. Andrews told the conference. "We have had a number of instances recently where housing developments have been constructed involving small, modern two and three-bedroom houses, where the house heating is to be done with gas.

"In many of these cases, the promotors have also included gas cooking, gas water heating, and even gas refrigeration. We find it is difficult to sell electrical appliances where gas is being sold for house heating and where, therefore, additional gas use comes at the low blocks on the rate.

"To meet this competition we would like to be able to offer electric house heating to our customers at installation costs comparable to other forms of automatic house heating and at operating costs comparable to fuels. Then we will not only open up new markets for ourselves in the form of the heating load itself, but we will go a long way towards enabling the installation of electric appliances of all sorts.

Drop Resistance Heaters

"We have studied the possibility of electric house heating by resistance-type space heaters. As you know, this is the most difficult of accomplishments on any really economic basis. . . .

"We made some calculations a few weeks ago on a housing project in one of the southern communities we serve and the estimated annual cost to the customer came out between two and three times the estimated cost with fuels. And so we are convinced we have to look for something else. And we turn to the heat pump. . . .

"The amount of heat which can be transferred by a refrigeration machine or a heat pump from a place of low temperature to a place of higher temperature is several times the amount of heat represented by the electric energy which goes into making the machine operate. The expression which describes this is the coefficient of performance and the coefficients of performance of heat pumps now available may run from three or four to one, depending on temperature conditions.

"This means that, as contrasted with space heating, the customer may need to buy only from one-quarter to one-third as many kilowatt hours as he would for heating by space heating. It means likewise that the demand created by the customer may be only from one-quarter to one-third as great as it would be for a space heating installation and, by virtue of the fact that the same unit can be operated for cooling in the summer time as for heating in the winter, the annual load factor is increased and the costs of operating and carrying the utility's enhanced facilities can be spread out over the whole year.

Estimated Load Factors

"In many parts of the country, utility men estimate that, with year-around heating and cooling the heat pump will give annual load factors of from 25% to 35% as compared to the lower load factors for heating alone. . . .

"We have in our company had actual experience with heat pump installations for some 12 years. We have units installed in eight office buildings in different parts of our system. These units . . . range in size from 15 hp. to 50 hp. The first of these was installed in 1934-35 and the latest in 1946 (Tidd plant). . . .

"During the period that these have been installed, they have been the only heating equipment . . . in these offices. They have given satisfactory service on both the heating and cooling cycles. They have convinced us that heating and cooling by a heat pump is practical and workable. . . .

"It occurred to us this spring that . . . it would be very worthwhile if we could interest some of the manufacturers in developing a heat pump specifically designed for domestic use. There has been very little real pioneering work on this problem by the manufacturers. . . .

Manufacturers Show 'Great Deal of Interest'

"Therefore, we prepared . . . specifications for domestic heat pumps and we sent these out to a number of manufacturers for their comments. At the same time, we sent the proposed specifications out to a great number of utility companies throughout the country asking them for their comments.

"We have now had individual talks with most of the manufacturers. . . . We have in most cases found a great deal of interest and in some cases enthusiasm. . . .

"In the case of the utility companies, we have had two general meetings, each one lasting two days, in which we had a very full and frank discussion of the heat pump from the point of view of both its commercial problems and possibilities and also from its technical and design point of view. . . .

"The discussions . . . have been very fruitful and as a result . . . revised specifications have now been sent out to the manufacturers and to the utility companies. . . .

"The specifications call for the manufacture of a total of 1,000 units, consisting of 600 units operating on an air-to-air basis and 400 units operating on a water-to-air basis. . . .

"In our preliminary specifications of last spring, we called for five different types of units including, in addition to these two types, a water-to-water and an air-to-water job, and one job in which a storage tank was included to act as a booster during extremely severe weather conditions.

"Our discussions with both the manufacturers and the utility companies brought out the point that, while these other types of units would unquestionably have future application, the program at this stage could be advanced and results could be secured more quickly if the number of units covered by the specifications was reduced to two.

"In our discussion with utility men at New York there was a great deal of interest in the taking of heat from the ground. We have not included in the specifications a separate unit for this type of operation, but it is of course apparent that a water-to-air job can readily be converted to a ground-to-air job by the use of a different type of coil to take the heat from the outside.

3-Hp. Units Planned

"All the units are to be 3 hp., single-phase jobs. This may seem at first to be a rather small unit, but we believe that this unit will be entirely capable of heating small two and three-bedroom houses, built with good insulation, and these are the type of houses which we find to be under construction at the present time throughout the country.

"In our discussions with the utilities, the point of view was advanced rather frequently that the initial market for heat pumps might be in large existing houses where people were desirous of having fully electrified homes and that, therefore, perhaps initially we ought to provide for something bigger than a 3-hp. unit.

"By the end of each meeting, however, it was pretty generally agreed that the 3-hp. job would be a good place to start. After some of the 3-hp. jobs have been built and we and the manufacturers have had experience with them, it would seem that larger units, or two-stage units, could be developed comparatively easily.

". . . there are six basic qualities which we have asked for: a. High reliability. b. Economical performance. c. Reasonable first cost. d. Low operating cost. The unit must be highly efficient and subject to inherently low maintenance cost. e. Compactness—it must be possible to get the unit through conventional doorways. f. Neat appearance.

Ask for Hermetics

"What we have in mind is a heat pump with a hermetically sealed compressor unit and a factory sealed refrigerant circuit which will operate with about the same trouble-free performance and the same quietness as the conventional domestic refrigerator of good design.

"It seems to us that, if the manufacturers can build machines as good as they do for domestic refrigeration purposes involving fractional horsepower motors, they can design the same type of a machine for the larger size of 3 hp. None of the manufacturers seriously disputes his ability to do this.

(Concluded on next page)

Costs of Heat Pump Seen as Competitive

(Concluded from preceding page)

"The specifications ask for performance which is better than the performance presently achieved from those units now on the market. The manufacturers, however, do not doubt their ability to meet the performance requirements. . . .

"For the air-to-air unit, the specifications call for a total kilowatt input, including compressor, fans, and all auxiliaries, of not to exceed 4.2 kw. and for a heat output of 48,000 B.t.u. per hour at 10° outdoor temperature, 70° indoor temperature, and a 100° temperature in the air which is circulated through the house. Under these conditions the coefficient of performance is 3.35. . . .

Own Experience Cited

"In the case of the water-to-air unit, such experience as we have had in our own office buildings indicates that ground water temperatures, even as far north as Central Ohio, remain in the range of 40° to 50° throughout the year. Therefore, the performance requirements for the . . . unit are based on a water temperature of 50° and again 70° inside temperature and 100° temperature for the air which is circulated in the house.

"The total kilowatt input is limited to 4 kw., including compressor, conditioner fan, and water pump. The unit is to deliver 62,000 B.t.u. per hour and under these conditions to have a coefficient of performance of 4.53. . . .

"With the inherent characteristic of the refrigeration cycle that for any given inside temperature the machine is more efficient the higher the temperature of the heat source, a great many people believe that in the northern part of the country perhaps only the water-to-air jobs would have application. It is unquestionably true that at some point as we go further north we will find this to be the case, but I think you might be interested to know that we have three air-to-air jobs in Ohio office buildings, one in Portsmouth and two in the vicinity of Steubenville. . . .

'Completely Adequate'

"The two jobs which have been in service through complete heating seasons have proven completely adequate for heating even under the most adverse conditions. The third is a brand new installation and will operate during the coming season. . . .

"The air-to-air job is bigger in size, because it has to have two large coils for exchanging heat between the air and the refrigerant but is, of course, simpler because it needs only to have a connection to the outside air, the inside duct system, and the electrical connection. It does not have the capacity at times of low outdoor temperature as does the water-to-air unit where the water temperature stays around 40° to 50°.

"The water-to-air unit is smaller because the coil transferring heat from the water to the refrigerant is smaller than the one transferring heat from air to the refrigerant, but in the water-to-air job you have to find a source of water, which usually means either increased first cost if you dig a well, or increased operating costs if you buy circulating water. . . .

"Another thing that we have in mind in the specifications is that the units . . . will switch over from heating to cooling automatically. Especially in the South and the Southwest where they frequently have cool nights and hot days we visualize the automatic operation of the machine on the heating cycle during the early morning and evening hours and on the cooling cycle in the middle of the day. This was stressed by the utility men at our meetings.

"The specifications also provide for the incorporation of a dehumidifier so that inside air in the house can be properly dried during hot, damp weather. This was stressed by utility men from the Southeast, especially those on the seacoast where humidity presents a very important problem. . . .

May Take 2 Years

"It appears from our discussions with the manufacturers that it is going to take pretty nearly two years from the time they go to work on the problem until they can begin to turn out units from the production line. This being the case, it seems to us very urgent that they get to work promptly so that we will begin to get units no later than the 1948-49 heating season.

"The specifications call for quotations from the manufacturers, complete with the information requested, not later than June 1, 1947. . . . The specifications further provide that acceptance of the proposal will be made by the purchaser not later than Aug. 1, 1947, and that starting July 1, 1948, at least 25 units shall be shipped each week until the order is completed.

"The specifications, with the request that immediate proposal be made by the manufacturers with reference to pilot units, have been sent to seven manufacturers, who have indicated interest in the program. . . .

(Here Mr. Andrews discussed units manufactured by Drayer-Hanson, Muncie Gear Works, and The Terra-Temp Co.)

Unit Costs In Doubt

"We do not as yet have any firm first cost figures from manufacturers because they have, of course, just begun the study of the final specifications. In October, 1945, Drayer-Hanson did quote us a price of $1,250 for a 3-hp. job of their present air-to-air design. Muncie has talked to us about a figure of $2,100 for some initial units, which price we understand includes a large portion of the development costs and is not necessarily indicative of what final costs will be based upon full production.

"Whether a 3-hp. job eventually winds up $800 or $1,000 or $1,200 or some other figure, it seems reasonably certain that the cost will be less than the combined cost of a fuel-fired heating system and a separate air conditioning system.

"You have no doubt seen some discussion about what rate electric companies will need to quote for service to heat pumps. . . .

"From the customer's point of view, we think that with expected efficiencies heat pump operation at our standard regular rates should in most cases be entirely competitive with heating by fuels. From our company's point of view, we think that with expected demands, kilowatt-hour consumptions and load factors we can afford to sell energy . . . at our standard rates. . . .

". . . the specifications contemplate the utility industry ordering 1,000 units. My own company, with about 3% of residential customers of the country, plans to take 50 units or 5% of the initial 1,000. . . .

Water Heating Studied

"When you begin to think about the heat pump and its very efficient operation in delivering heat where you want it, the thought will probably occur to you, couldn't this be used for water heating?

"Last spring, when we drew up our initial specifications, we incorporated in them a small condenser unit which could be used for heating household water. As we went into the matter further, however, we realized that the requirements for hot water and the requirements for household heating and cooling would not necessarily occur simultaneously and that by including the water heating in the main system we might be introducing unnecessary complications. Therefore, we concluded that we had better treat water heating as a separate subject.

"A heat pump water heater also has many attractive commercial possibilities. The 5% saturation of resistance type water heaters which we have on our system is by no means satisfactory. . . we find, of course, our biggest obstacle is operating costs.

"On our system the conventional type water heater uses about 3,600 kwhrs. a year and the customer pays us about $40 a year and this sort of a set-up by no means meets our natural gas competition. . . .

"If we could have a heat pump water heater with a coefficient of performance of three or four or more to one, it seems to us that we ought to be able to exploit some of this market which we have not been able to really go after heretofore.

"Accordingly, we developed this spring specifications for a heat pump water heater. These also were sent out to manufacturers and have been discussed with them and were likewise discussed at our utility meetings. . . .

"The water heater specifications, which have gone out to the same manufacturers as for the household heating and cooling job, provide for a single air-to-water design. We have asked for 10,000 heat pump water heaters broken down into 6,000 50-gallon heaters which will have ⅓-hp. motors, 3,000 80-gallon heaters which will have ½-hp. motors, and 1,000 110-gallon heaters which will have ¾-hp. motors.

Desired Performance

"The performance which is asked for, based on 50-degree air temperature at the cooling surface, 50-degree incoming water temperature, and 140-degree water temperature in the tank is 5,850 B.t.u. per hour for the 50-gallon tank, 8,750 . . . for the 80-gallon tank, and 13,000 . . . for the 110-gallon tank. The coefficient of performance for these conditions is about 4.5. . . .

"If we consider the heat output of these machines, I think you will find that it compares very favorably with the heat output of conventional reristance type heaters and they should adequately meet the customers' requirements for hot water.

"The water heater is to be built as a single unit so that it can be moved in and placed in operation by simply connecting the water lines and the electric service. Attention is given to quietness of operation, neat appearance, etc. The motors specified are single-phase, suitable for operation on either 120 or 240 volts and are to be capacitor type motors to obtain the highest power factor and efficiency.

Expect Heaters This Year

"Our discussions with manufacturers indicate that heat pump water heaters . . . can be offered commercially in 1947, or approximately a year before the house heating and cooling units will be available on a commercial basis. The specifications call for quotations complete with all information by Jan. 1, 1947, acceptance of the proposal to be made by the purchaser by March 1, 1947, and starting of delivery of at least 250 units a week by Sept. 1, 1947.

"While we do not have any quotations on the cost of these, it is probable that they will cost the customer about $100 more than a resistance heater of the same tank size. As production increases, it may well be that this differential can be reduced. Commercially, we will have the problem of balancing the increased first cost against the lower operating cost and, if we find ways to utilize the cooling effect to the customer's advantage, this also will have its part. . . ."

200-Ft. Well Supplies Heat from Earth For Homes In Muncie Reverse Cycle Unit

MUNCIE, Ind.—By using the heat of the earth as a source of thermal energy to heat the home, Muncie Gear Works, Inc. here has developed what it claims is a new type of heating system.

Known as Marvair, the system utilizes a water pipe heat exchanger sunk more than 200 ft. into the ground to transfer the earth's natural warmth to a house by means of a reverse cycle refrigeration system which heats the house in winter and cools it in summer, according to the company.

Marvair works something like this:

A heat exchanger, consisting of a vertical U tube pipe 1 in. in diameter, is sunk into a well having a minimum bore of 4 or 5 in. and an average depth of 200 ft. below the natural water level.

According to a chart published by the U. S. Geological Survey, the temperature of water at depths of 30 to 60 ft. below the earth's surface ranges from 37° F. in the most northerly sections of the country to 77° F. in southern Florida.

Water temperature will increase 1° F. for every 64 ft. further down one goes, the company says. Water temperatures reflect earth temperatures, it points out.

In the Marvair system, cold water pumped through the heat exchanger travels down into the earth through galvanized pipe and returns, warmed, to the surface in aluminum pipe. The aluminum pipe is selected for its better heat transfer characteristics, according to Muncie.

The galvanized pipe is put through a 1½ in. galvanized sleeve, sealed at the top to provide dead air space for insulating the inner pipe. The insulating sleeve descends 100 ft. below the natural water level.

The warm water, pumped to the surface by a horizontal centrifugal pump, flows into a water-cooled condensing coil, which serves as an evaporator during the heating cycle. There the water gives up its heat to the liquid refrigerant, causing it to evaporate.

Typical performance data on the water cooled "condensing coil" when operating on the heating cycle is as follows:

Water temperature in	50°	60°
Water temperature out ...	41°	49.8°
B.t.u. rate per hour ...	37,100	42,200
Suction pressure	29.90 lb.	37.6 lb.
Suction temperature	33.2°	48.9°
Temperature of liquid to expansion valve	66.4°	75.7°
Flow in gals. per hour ..	495	500

Absorbed by the refrigerant gas, the heat is then carried to the compressor. The gas, at a higher temperature and pressure, is discharged from the compressor and moves to a finned coil through which cool air flows. On the heating cycle this coil is the condenser, warming up the air and condensing the hot refrigerant gas into liquid refrigerant which then goes to the receiver.

The finned coil is 14 rows wide and six rows deep with seven fins per inch of secondary surface. From here on, the system consists of conventional ductwork, including filters.

As heat is required, the high pressure liquid refrigerant flows from the receiver through an expansion valve into the water-cooled "condenser" to repeat the cycle.

When cooling is desired instead of heating, the path of the refrigerant in the refrigeration system is reversed. The finned coil becomes the evaporator and the water-refrigerant heat interchanger becomes the condenser.

How Cycle Is Reversed

The reversal of the cycle is accomplished by the automatic operation of four solenoid valves working in pairs. One valve is located on the suction line, one on the liquid line, one in the suction by-pass, and one in the liquid by-pass.

In the cooling cycle, the suction line and liquid line valves are open and the suction by-pass and liquid by-pass valves are closed. In the heating cycle, the suction line and liquid line valves are closed and the suction by-pass and liquid by-pass valves are open.

To avoid valve chatter, to prevent excessive starting load, and to insure valve seating, the following operating sequence is followed in reversing the refrigerant flow:

1. Compressor stops.
2. Second pair of valves opens, allowing all lines to equalize.
3. First pair of valves close, allowing seating period.
4. Compressor starts under lighter load and with valves properly seated.

All solenoid valves are heavy-duty, large capacity, providing abundant power for extreme operating conditions, positive in action and giving a low drop, Muncie declares. They employ 220 volt, 60 cycle coils.

Comfort is maintained in the Marvair system by a fully automatic temperature controller utilizing a balancing motor and mercury auxiliary switches. The temperature controller consists of a vapor-filled bulb which actuates the instrument bellows, which in turn, actuates the potentiometer arm.

Setting the Controller

To set the controller, Muncie says, it is only necessary to set the indicator to the temperature to be maintained. The controller is factory calibrated and requires no further adjustment.

The change in potentiometer arm setting causes a proportional change in the balancing motor. The mercury auxiliary switches are mounted on each end of the motor shaft and thus operated in accordance with temperature variations. These switches operate the solenoid valves. The unit is completely housed to eliminate accidental damage.

The balancing motor is of new design with all moving parts of the gear train as well as the capacitor power unit immersed in oil, according to Muncie. Periodic lubrication is not necessary. As the motor load is light and always consistent there is no danger of overload, the company says.

Limit switches within the motor assembly prevent any possibility of motor arm rotation past the prescribed 160°. As there is no mechanical linkage to the motor shaft, there is no danger of motor damage, according to Muncie.

Mercury auxiliary switches are employed due to the many months which elapse before climatic conditions call for a reversal of cycle, Muncie says. Because they are glass sealed, making them dust, dirt, and corrosion free, these switches are positive in action even after long inactive periods. Contact wear is negligible.

Standard, interchangeable parts are used throughout the temperature control unit, the company says.

The compressor in the refrigeration system is a 4-cylinder V type, 1¾ in. bore by 1¾ in. stroke, wth cylinders cast in pairs and mounted at 90° angles. Pistons are timed to give one compression stroke per 90° of revolution. Blocks are cased so that suction gas will enter a chamber between the cylinders.

Here oil is separated and returned to the case through a check valve. The gas passes up to a cased valve plate on top of the cylinder block. This, says Muncie, results in smooth non-pulsating flow of refrigerant and exceptionally quiet operation.

A dual pressurestat with adjustment visible through an unbreakable window is provided.

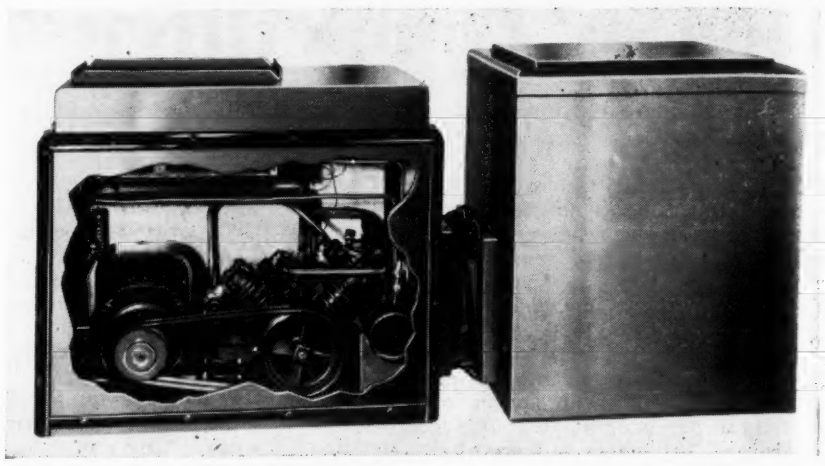
Specifications for the compressor are:

	3 Hp.	5 Hp.
RPM	1060	1265
CFM	10.3	18.2
Piston ft./min.	309	369
Suction Line	1⅛" o.d.	1⅛" o.d.
Liquid Line	½" o.d.	⅜" o.d.
Refrigerant	"F-12"	"F-12"

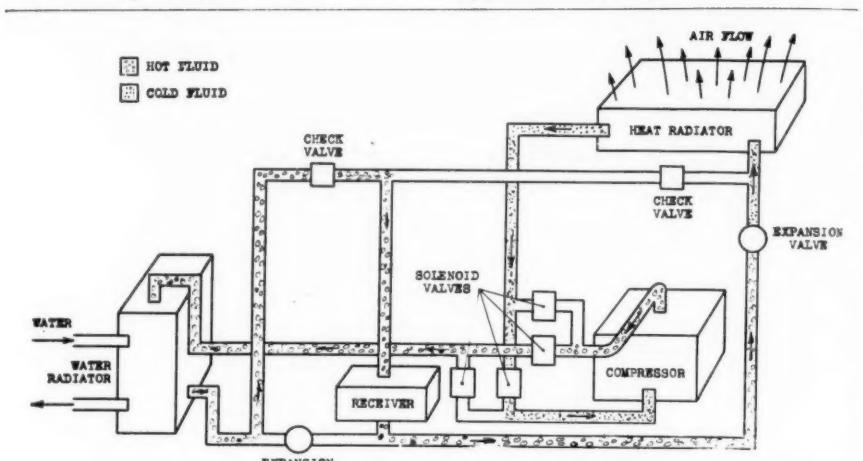
All motors in the Marvair system are of the capacitor-start, induction-run type. They all employ 230 volt, 60 cycle and single or three-phase current.

The compressor motor has a starting torque of approximately 300%. The air blower and water system motors have starting torques of approximately 185%.

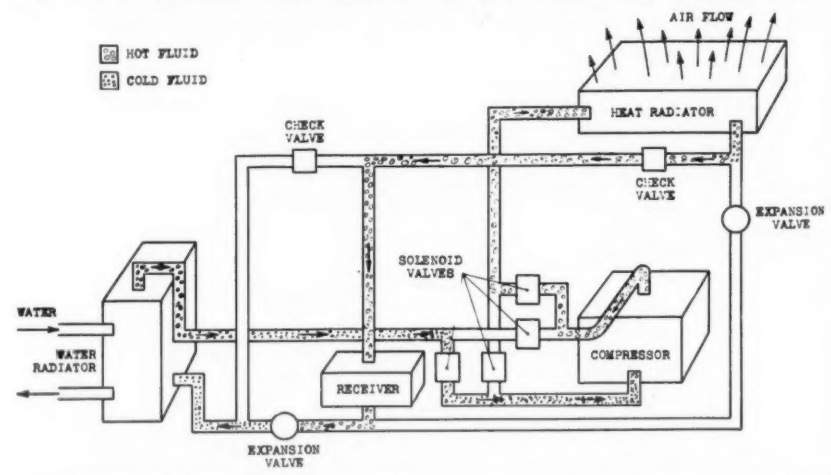
Two Compartments House Muncie Heat Pump



Housed in the exposed compartment at left is the condensing unit and the water-cooled condenser of the reverse cycle Marvair unit produced for home heating by the Muncie Gear Works. Compartment at right houses the evaporator coil which cools air in summer and heats it in winter.



Refrigerant flow in the Marvair unit during the cooling cycle is shown above. The diagram below depicts the flow during the heating cycle



Specifications for Muncie's 'Marvair' Unit

Motor Size	Width	Length	Height	Weight	Heating Capacity @ 50° Water	Cooling Capacity @ 75° Water
3 hp.	28	40	34	845	60,000 B.t.u.	32,000 B.t.u.
5 hp.	28	40	34	1075	100,000 B.t.u.	54,000 B.t.u.

Fan specifications are:

Size	Motor Size	Width	Length	Height	Weight	CFM	Static Pressure
3 hp.	⅓	21¾ in.	27 in.	22 in.	87 lbs.	1,500	¾ in.
5 hp.	½	21¾ in.	27 in.	22 in.	87 lbs.	2,000	¾ in.

Simple Dial Control Is Feature Of 'Airtopia' Reverse Cycle Unit

LOS ANGELES—"Airtopia" is a complete air conditioning unit, consisting of a reverse cycle refrigerating system, so constructed that cooling, heating, ventilating, air filtering, humidifying, and dehumidifying are accomplished as needed.

Thus Drayer-Hanson, Inc. here describes its answer to the problem of wrapping winter heating and summer cooling into one package.

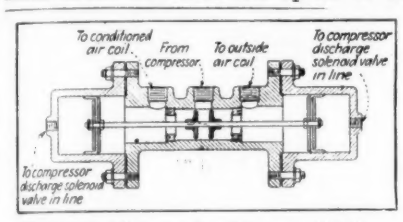
Controls to be operated by the consumer are simple in the extreme, the company says. All he must do is turn the unit on and set a dial labeled "cooler-warmer" to the temperature he likes best.

Lights on the control panel tell the consumer whether the unit is cooling or heating. If neither light is on, the unit is recirculating air.

Airtopia does its cooling-heating job through a refrigerating unit having two sets of coils sharing common fins. These coils are connected to a single compressor of 3 to 10 hp.

One set of coils, in use only during the heating cycle, has the evaporator on the "outside air" side of the unit and its condenser on the "conditioned air" side. The other set, used only during the cooling cycle, has its evaporator on the conditioned air side and its condenser on the outside air side.

The conditioned air side of the unit feeds from and into the space to be conditioned. The outside air side feeds from and into the out of doors.



Cross-section of the switching valve. High pressure refrigerant from the compressor, entering at top center, is switched to the right or left according to the position of the piston assembly within the valve cylinder.

A piston-type switching valve, actuated by a thermostatically controlled motor and located between the compressor and the condensers, sends the high pressure refrigerant vapor to either the conditioned air side on the heating cycle or the outside air side on the cooling cycle.

The condensers are multiple pass, high velocity, low pressure drop design. Vapor velocity is established by a jet circulator. Vapor is recirculated until condensed, according to Drayer-Hanson.

The evaporators are also multiple pass and are equipped with the Drayer-Hanson liquid distributor for equalizing refrigerant flow.

When heating, Airtopia draws in fresh air from outside. A fin coil containing warm liquid refrigerant from the receiver is placed in the path of the fresh air to raise its temperature, at the same time cooling the liquid before it goes to the evaporator.

The warmed air passes over the evaporator and gives up its heat. The air is then expelled out of doors at a lower temperature. Airtopia transfers the heat from the air to the condenser on the conditioned air side of the unit.

Air from the conditioned space is drawn through the unit and over the conditioned air condenser. It absorbs the heat from the coil and circulates it through the room.

On the cooling cycle, the refrigerant in the conditioned air evaporator absorbs the heat from the air drawn from the conditioned space and passes it to the condenser on the other side of the unit. Here the warm air is expelled.

Filters on the unit remove dust and dirt during both cycles.

Moisture condensed on the conditioned air evaporator during the cooling cycle is drained to a rotating disc which throws it into the outside air stream where it is evaporated and rejected to the out of doors. On the heating cycle, moisture condensed on the outside air evaporator is drained to another rotating disc which throws it into the air stream.

Between the start of the heating cycle and the cooling cycle, there is a gap of about 2° F. through which only the conditioned air fan operates for ventilation.

An electric clock can be pre-set to start the conditioned air fan at the desired hour and let it operate for a pre-determined length of time. The control circuits are energized when this fan starts. It is always running while the plant is in operation.

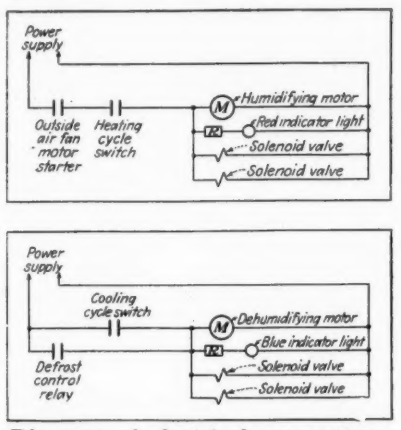


Diagram of electrical connections in heating and cooling cycles, showing how the operation of other functions is dependent on starting of fan motors. Solenoid valves control flow of high-pressure refrigerant through the expansion valves, operating in coordination with the switching valve.

Describing the system's controls, G. E. Clancy pointed out that a thermostat, with its temperature-sensitive bulb located in the return air stream, controls the operation of a reversible motor. The rotation of the motor operates a rheostat which supplies energy to a small solenoid. This solenoid, in turn, exerts pressure against the normal movement of the thermostat arm so that for any temperature within the range of the thermostat the motor assumes a definite position.

The motor is provided with adjustable cams which operate switches for cooling or heating, and for changes from low speed to high speed operation in all but the 3-hp. compressor motor.

Here Drayer-Hanson executives study performance of "Airtopia" unit (at right) installed at the plant. Inset shows special control panel.

Mr. Clancy went on:

"As the control motor turns in the direction calling for cooling, one of these switches closes, thus starting the ventilating motor which in turn starts the compressor motor on low speed.

"The compressor motor is provided with pressure-sensitive cutouts in the control circuit to protect against operation at excessively high or low pressures.

"At the same time the closing of the switch energizes the solenoid valve supplying liquid refrigerant to the cooling coil. A small solenoid pilot valve controls the operation of a high pressure, vapor operated switching valve which directs the vapor discharged from the compressor to the proper condensing unit.

"Should the operation at low speed be insufficient to correct the temperature in the conditioned space, the control motor will turn farther in the same direction, making contact with another switch that turns the compressor motor to high speed.

"It will operate at high speed until the thermostat is so satisfied that it stops the entire cycle except for the operation of the outside air fan.

"When the thermostat calls for heat, the process is identical except that the solenoid supplying liquid to the other evaporator and the solenoid pilot of the switching valve are energized instead of those used on the cooling cycle."

Store Sells All Freezers In Week; Orders Will Take Next Shipment

BOSTON—Gilchrist Co. launched the sale of Philco freezers here in December and the response by the end of the week was a sellout of the quantity on hand, with enough orders and immediate demand to take up an additional shipment which is on its way to the store, it was reported.

It was believed in the trade here that the offering was the first anywhere in the country, although this was not stated in the store's advertisement. The advertisement pulled very satisfactorily, according to store reports. The quantity of freezers in the initial stock was said to be "good." There were some still available two days after the advertisement appeared.

Priced at $199.50, the freezer has a capacity of 200 assorted packages. Installation charge of $6.50 is made by the store.

Celanese Corp. to Triple Prepackage Wrap Output

NEW YORK CITY—Foreseeing a rapid growth in consumer acceptance of plastic wrapped fresh vegetables, which are even now gracing the refrigerated display cases of up-to-date vegetable markets, Celanese Corp. has announced that it will triple its production of Lumarith transparent film, a cellulose acetate product porous enough to permit vegetables to "breathe" when packaged.

To increase production, Celanese is expanding its plants in Belvidere and Newark, N. J.

Lumarith film wrapping will reduce spoilage from shipping and handling by as much as 40%, Celanese says, basing its statement on experiments conducted.

Condenser Service Gets Big West Coast Job For Public Utility

HOBOKEN, N. J. — Condenser Service & Engineering Co., Inc., Hoboken, has been awarded a contract for constructing and installing three 70,000 sq. ft. condensers for the Wilmington Harbor Plant of the City of Los Angeles.

This is believed to be one of the largest single condenser jobs for a public utility that has ever been awarded to one company.

Restaurant Features Walk-in for Meats

CHEYENNE, Wyo. — The Trail Coffee Shop at 216 West 16th St. has been opened for business by Ed and Lee Yarter with a refrigerated meat room which they claim is the finest, most modern in the state.

The walk-in cold storage room opens off a spacious refrigerated work room, equipped with a portable air conditioning unit, where meats are prepared for the kitchen.

Servicing Truck Refrigeration Units

Editor's Note: Operation of Advance Mfg. Co.'s reverse cycle Trailaire truck unit on the heating cycle is outlined in this instalment. This series was prepared in collaboration with Henry O. Kirkpatrick, chief engineer of Advance.

Instalment No. 17

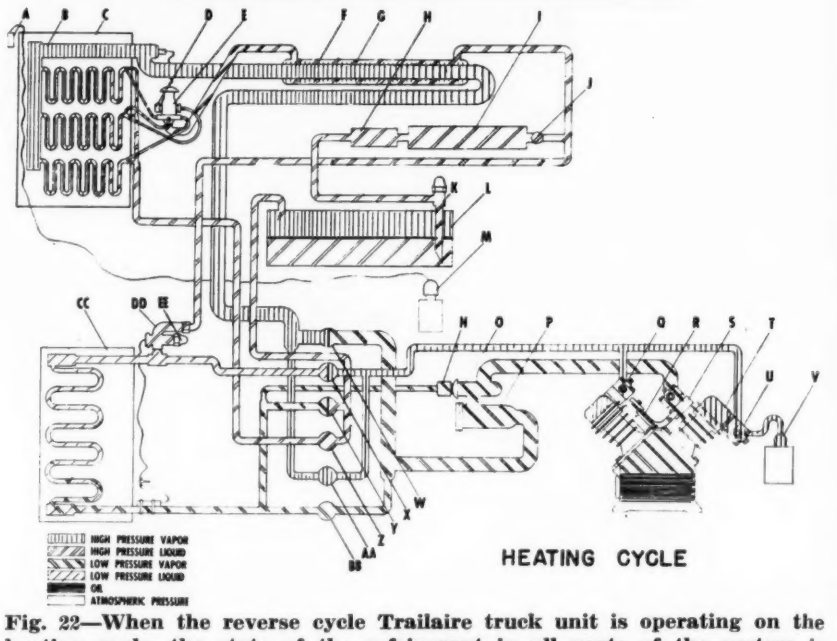


Fig. 22—When the reverse cycle Trailaire truck unit is operating on the heating cycle, the state of the refrigerant in all parts of the system is as shown in this schematic drawing. The heating cycle is also employed to defrost the evaporator coil (C).

Key to drawing: **A**—thermostat bulb; **B**—evaporator suction header; **C**—evaporator coil (upper); **D**—expansion valve adjusting stem; **E**—multi-outlet thermostatic expansion valve; **F**—heat exchanger; **G**—heat transfer fins; **H**—liquid line strainer; **I**—dehydrator; **J**—liquid indicator; **K**—receiver service valve; **L**—receiver tank; **M**—thermostat temperature control; **N**—load limiting valve bellows; **O**—suction load limiting valve; **P**—suction line strainer; **Q**—compressor discharge service valve; **R**—compressor suction manifold; **S**—compressor suction service valve; **T**—compressor; **U**—compressor discharge service valve; **V**—high pressure cut-out; **W**—hand valve suction (cooling); **X**—hand valve discharge (cooling); **Y**—hand valve liquid return (cooling); **Z**—hand valve liquid return (heating); **AA**—hand valve discharge (heating); **BB**—hand valve suction (heating); **CC**—condenser coil (lower); **DD**—thermostatic expansion valve; **EE**—thermostatic expansion valve adjusting stem.

• • •

Heating Cycle

Trucking of produce during the cold months of winter often requires that the interior be heated to keep such produce from freezing. To fill this need the Trailaire truck refrigeration unit is designed as a reverse cycle system so that the heat resulting from the compressing of the refrigerant gas may be used to keep the truck interior at a sufficiently high temperature to prevent freezing.

The reverse cycle design also serves to defrost the evaporator coil at required intervals when the truck unit is operating on the conventional cooling cycle. On the heating cycle the Trailaire unit operates essentially the same as on the cooling cycle, the chief exception being that the upper evaporator coil (C) becomes the condenser coil to transfer heat from the hot, compressed refrigerant gas to the truck interior, and the lower condenser coil (CC) becomes the evaporator.

On the heating cycle the multi-outlet thermostatic expansion valve (E) is inoperative, and the single outlet thermostatic expansion valve (DD) at the lower coil goes into action. On the cooling cycle the latter valve (DD) is inoperative.

To run the unit on the heating cycle, the following valves must be open:

1. Heating liquid return hand valve (Z).
2. Heating discharge hand valve (AA).
3. Heating suction hand valve (BB).
4. Compressor discharge service valves (Q) and (U).
5. Compressor suction service valve (S).
6. Receiver service valve (K).

It is also necessary that the three following valves be closed when the unit is operating on the heating cycle:

1. Cooling suction hand valve (W).
2. Cooling discharge hand valve (X).
3. Cooling liquid return hand valve (Y).

Complete operation of the Trailaire heating cycle may be traced on the accompanying schematic drawing, Fig. 22, as follows:

Starting in the crankcase of the compressor, the refrigerant is in a low pressure vapor state. This low pressure vapor is compressed by the compressor and discharged into the compressor heads where the refrigerant is then in a high pressure vapor state.

The hot, high pressure vapor is forced through the compressor discharge line, passes through the open heating discharge hand valve (AA), continuing in the line up through the center of the heat exchanger (F)—the heat exchanger serves no purpose on the heating cycle. From the heat exchanger the high pressure vapor continues to the upper coil (C) which serves as the condenser.

In the upper coil (C) the high pressure vapor gives up most of its heat to the cooler air blowing across the coil, thus warming up the interior of the trailer by convection and likewise causing the refrigerant gas to condense into the liquid state.

Still under high pressure, the liquid refrigerant is then forced through the heating liquid return line, the open heating liquid return hand valve (Z), the liquid return line, finally spilling into the inlet of the receiver tank (L) where there is high pressure vapor on top of the high pressure liquid refrigerant.

The high pressure liquid is forced through the submerged tube in the receiver (L) into the liquid line where it flows through the liquid line strainer (H), liquid line dehydrator (I), liquid indicator (J), and thence to the single outlet thermostatic expansion valve (DD).

As it passes through the small orifice of the thermostatic expansion valve (DD) the high pressure liquid expands and becomes low pressure liquid, picking up heat from the outside air as it moves into the lower condenser coil (CC). In this coil the liquid refrigerant evaporates as it continues to pick up heat from the outside air.

Thus, the coil (CC), which serves as a condenser coil on the cooling cycle, becomes an evaporator on the heating cycle.

The low pressure vapor is drawn through the heating suction line from the bottom of the lower coil (CC) through the open heating suction hand valve (BB), the suction line strainer (P), load-limiting valve (O), thence through the suction line to the compressor suction service valves (S) and into the compressor crankcase. Here the low pressure vapor is again ready to be compressed, thus completing the full cycle.

During the heating cycle the pressure on the bellows of the load-limiting valve (O) is low pressure vapor, giving the valve a setting of approximately 10 lbs. gauge.

Refrigeration Problems
And Their Solution

By P. B. Reed

For Service and Installation Engineers

Manager, Refrigeration and Air Conditioning Division, Perfex Corp.

Electric Currents (5)

Wh all this talk about volts, ampe s, and Ohm's Law? Why not simpl tell how a motor is made and how t repair it? Just this; all this know ledge of theoretical principles is ne essary to an understanding of the p actical uses of electricity and why he equipment works. Some of this heory" is an absolute necessity; as well go on a job without a tool kit as without a knowledge of *why* certain things happen and why certain practices are followed.

One of these "first principles" that require understanding is the relationship of the voltage, amperages, and resistance in a circuit, or part of a circuit. In the last article these relationships were traced, but although it was not emphasized, the relationships described applied especially to direct current rather than to alternating current.

How these relationships apply in the case of a.c. is very important, more important to most refrigeration men in fact, than for d.c., for the vast majority of installations of refrigeration equipment are operated by alternating rather than direct current. Since there are other factors to consider for a.c., then it is quite important to know what they are and what effect they have.

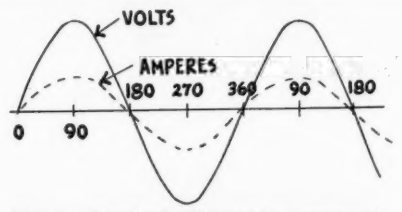


Fig. 1—Typical alternating current curves, showing the voltage and current "in phase" or in step with one another. This is true when the flow of current in the circuit is impeded by resistance only.

RESISTANCE IMPEDES CURRENT FLOW

Let us consider resistance especially. There are several things that try to hold back or "impede" the flow of electric current through a wire or other conductor. As long as the current is flowing continuously in the same direction and with the same intensity, the resistance offered by the conductor to the flow of current is due only to: (1) the kind of material of which the conductor is made, (2) its size, that is, its cross section, and (3) its length.

1. Copper offers less resistance than aluminum, and aluminum less than iron.

2. A thick wire of large cross section offers less resistance than a small diameter (large gauge) wire.

3. A short wire offers less resistance than a long wire.

The tendency of the conductor to impede or hold back the flow of current due to these three things is called its electrical "resistance." It is measured in ohms. One ohm is the resistance that permits the flow of one ampere of current at a pressure of one volt.

Resistance of this sort does not affect the relationship between the voltage or pressure of the electric current nor the rate of current flow as measured by the amperes. They stay "in step" with one another; one rising as the other rises and falling as the other falls. This is shown in Fig. 1.

Note that resistance is the only thing that impedes the flow of current if the current is flowing in the same direction and with the same intensity; that is, without interruption and without change in value, as with direct current at constant load. Resistance is not the only thing when the flow of current is interrupted either starting or stopping, or if it changes in intensity; so resistance is not the only thing that impedes the flow of a.c. which changes direction and instantaneous values many times a second.

(To Be Continued)

3 Organize Service Firm In Fort Atkinson, Wis.

FORT ATKINSON, Wis.—The Refrigeration Service, Inc., has been incorporated here by Harley N. Hammon, Arnold V. Land, and Earl W. Dennis, to install, sell, and service all makes of refrigeration units. Sixty shares of capital stock at $50 par value have been authorized.

PATENTS

Week of Nov. 26 (Continued)

AVAILABLE FOR LICENSING OR SALE

The following patents are offered by Allin B. Crouch, Trustee, 1412 Clifton Park Road, Schenectady, N. Y., for non-exclusive licensing on a royalty basis:

Pat. 1,964,890. CONDENSER. Patented July 3, 1934. Group 35—84. Reg. No. 4,287.

Pat. 2,008,809. COMPRESSOR. Patented July 23, 1935. Group 35—84. Reg. No. 4,288.

Pat. 2,047,167. ADJUSTABLE CLEARANCE MECHANISM. Patented July 7, 1936. Group 35—84. Reg. No. 4,289.

Pat. 2,015,487. REVERSIBLE EXPANSION MEANS FOR INTERCHANGEABLE CONDENSER AND EVAPORATOR FUNCTIONS. Patented Sept. 24, 1935. Group 35—84. Reg. No. 4,290.

Pat. 2,131,355. REFRIGERATING SYSTEM FOR COOLING OR HEATING. Patented Sept. 27, 1938. Group 35—84. Reg. No. 4,291.

Pat. 2,024,323. APPARATUS FOR COMPRESSING GASEOUS FLUIDS. Patented Dec. 17, 1935. Group 35—84. Reg. No. 4,292.

Pat. 2,024,728. RESILIENT SUPPORT. Patented Dec. 17, 1935. Group 35—84. Reg. No. 4,293.

Pat. 2,052,589. CUSHION SUPPORT. Patented Sept. 1, 1936. Group 35—84. Reg. No. 4,294.

Pat. 2,027,058. METHOD AND APPARATUS FOR AIR CONDITIONING. Patented Jan. 7, 1936. Group 35—84. Reg. No. 4,295.

Pat. 2,031,614. VALVE MECHANISM AND ACTUATING MEANS THEREFOR. Patented Feb. 25, 1936. Group 35—84. Reg. No. 4,296.

Pat. 2,033,063. MEANS FOR CONTROLLING REFRIGERATING APPARATUS AND INTERCHANGING THE FUNCTIONS OR COMPLEMENTARY HEAT EXCHANGE ELEMENTS THEREOF. Patented March 3, 1936. Group 35—84. Reg. No. 4,297.

Pat. 2,052,561. MEANS FOR INTERCHANGING COMPRESSOR AND CONDENSER FUNCTIONS OF A REFRIGERATING SYSTEM AND CONTROLLING A COMPRESSOR THEREFOR. Patented Sept. 1, 1936. Group 35—84. Reg. No. 4,298.

Pat. 2,047,169. AIR CONDITIONING APPARATUS. Patented July 7, 1936. Group 35—84. Reg. No. 4,299.

Pat. 2,048,282. CONDENSATE CONTROL MEANS FOR AIR CONDITIONING APPARATUS. Patented July 21, 1936. Group 35—84. Reg. No. 4,300.

Pat. 2,054,350. AIR CONDITIONING APPARATUS. Patented Sept. 15, 1936. Group 35—84. Reg. No. 4,301.

Pat. 2,055,780. RESERVE REFRIGERANT SUPPLY AND APPARATUS. Patented Sept. 20, 1936. Group 35—84. Reg. No. 4,302.

Pat. 2,062,435. METHOD AND MEANS OF DETECTING REFRIGERANT LEAKS. Patented Dec. 1, 1936. Group 35—84. Reg. No. 4,303.

Pat. 2,065,195. AUTOMATIC OIL SEPARATOR CONTROL FOR REFRIGERATING SYSTEMS. Patented Dec. 22, 1936. Group 35—84. Reg. No. 4,304.

Pat. 2,065,445. AIR DISTRIBUTING SYSTEM. Patented Dec. 22, 1936. Group 35—84. Reg. No. 4,305.

Pat. 2,073,891. MEANS FOR INTERCHANGING THE FUNCTIONS OF COMPLEMENTARY HEAT EXCHANGE ELEMENTS. Patented March 16, 1937. Group 35—84. Reg. No. 4,306.

Pat. 2,081,553. AIR CONDITIONING APPARATUS. Patented May 25, 1937. Group 35—84. Reg. No. 4,307.

Pat. 2,081,845. REVERSIBLE REFRIGERANT EXPANSION MEANS. Patented May 25, 1937. Group 35—84. Reg. No. 4,308.

Pat. 2,085,703. AIR CONDITIONING APPARATUS. Patented June 29, 1937. Group 35—84. Reg. No. 4,309.

Pat. 2,091,774. MUFFLER-FILTER APPARATUS FOR AIR FLOW PASSAGES. Patented Aug. 31, 1937. Group 35—84. Reg. No. 4,310.

Pat. 2,091,787. EXPANSION VALVE MECHANISM FOR REFRIGERATING SYSTEMS. Patented Aug. 31, 1937. Group 35—84. Reg. No. 4,311.

Pat. 2,105,205. AIR CONDITIONING APPARATUS. Patented Jan. 11, 1938. Group 35—84. Reg. No. 4,312.

Pat. 2,111,133. CONDENSATE ENTRAINMENT MEANS. Patented March 15, 1938. Group 35—84. Reg. No. 4,313.

Pat. 2,111,570. LIQUID CONTROL MEANS FOR AIR CONDITIONING APPARATUS. Patented March 22, 1938. Group 35—84. Reg. No. 4,314.

Pat. 2,145,380. CONDENSATE DISPOSAL MEANS FOR AIR CONDITIONING UNITS. Patented Jan. 31, 1939. Group 35—84. Reg. No. 4,315.

Pat. 2,113,691. COMPRESSOR. Patented April 12, 1938. Group 35—84. Reg. No. 4,316.

Pat. 2,156,943. COMPRESSOR-UNLOADER STRUCTURE. Patented May 2, 1939. Group 35—84. Reg. No. 4,317.

Pat. 2,121,837. AIR CONDITIONING APPARATUS. Patented June 28, 1938. Group 35—84. Reg. No. 4,318.

Pat. 2,112,870. SELF-CONTAINED AIR CONDITIONING ROOM UNIT. Patented April 5, 1938. Group 35—84. Reg. No. 4,319.

Pat. 2,131,544. ROTARY SEAL. Patented Sept. 27, 1938. Group 35—84. Reg. No. 4,320.

Pat. 2,134,349. CONDENSATE DISPOSAL MEANS FOR AIR CONDITIONING APPARATUS. Patented Oct. 25, 1938. Group 35—84. Reg. No. 4,321.

Pat. 2,145,575. REVERSING VALVE MECHANISM. Patented Jan. 31, 1939. Group 35—84. Reg. No. 4,322.

Pat. 2,145,909. PROTECTIVE CONTROL CIRCUIT AND APPARATUS. Patented Feb. 7, 1939. Group 35—84; 36—19. Reg. No. 4,323.

Pat. 2,148,596. AIR CONDITIONING UNIT. Patented Feb. 28, 1939. Group 35—84. Reg. No. 4,324.

Pat. 2,157,047. COMBINED AIR CONDITIONING UNIT AND HAIR DRIER. Patented May 2, 1939. Group 35—84. Reg. No. 4,325.

Pat. 2,163,691. PORTABLE ROOM COOLING UNIT. Patented June 27, 1939. Group 35—84. Reg. No. 4,326.

Pat. 2,250,978. AIR CONDITIONING APPARATUS. Patented July 29, 1941. Group 35—84. Reg. No. 4,327.

Pat. 2,276,814. REFRIGERATION SYSTEM. Patented March 17, 1942. Group 35—84. Reg. No. 4,328.

Pat. 2,071,366. FABRICATED STRUCTURE FOR AIR CONDITIONING UNITS. Patented Feb. 23, 1937. Group 35—84. Reg. No. 4,329.

Pat. 2,130,327. AIR CONDITIONING APPARATUS. Patented Sept. 13, 1938. Group 35—84. Reg. No. 4,330.

Pat. 2,132,372. AIR CONDITIONING APPARATUS. Patented Oct. 4, 1938. Group 35—84. Reg. No. 4,331.

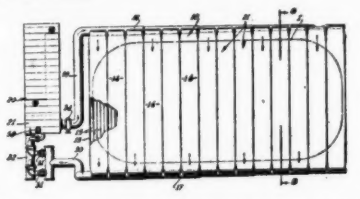
Pat. 2,185,387. AIR CONDITIONING APPARATUS. Patented Jan. 2, 1940. Group 35—84. Reg. No. 4,332.

Pat. 2,289,035. AIR CONDITIONING APPARATUS. Patented July 7, 1942. Group 35—84. Reg. No. 4,333.

Re. 22,058. AIR CONDITIONING UNIT. Reissued April 7, 1942. (Original No. 2,058,405, dated Oct. 27, 1936.) Group 35—84. Reg. No. 4,334.

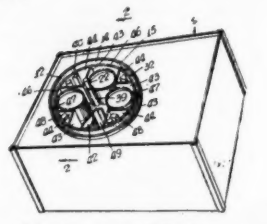
Week of Dec. 3

2,411,919. ICE RINK. Frank J. Zamboni, Hynes, Calif. Application Sept. 16, 1944, Serial No. 554,481. 14 Claims. (Cl. 62—12.)



11. In a skating ring, the combination of a rink floor, a brine receiving container, a suction pump arranged to discharge into said container, a brine circuit including a supply line and a return line and a portion interposed between said lines, said portion having the top thereof arranged to form said rink floor, said supply line having an inlet end portion communicating with said container, said return line being connected to the intake of said suction pump, and means for lowering the temperature of the brine circulating through said circuit, the parts being so constructed and arranged that the pressure in the line in heat exchange relation with said floor is maintained at sub-atmospheric pressure.

2,412,068. ROTARY ICE CREAM DISPENSING CABINET. Arthur H. Spader, Bergenfield, N. J. Application June 13, 1944, Serial No. 540,099. 16 Claims. (Cl. 62—89.)



4. A cabinet comprising an upright circular refrigerated chamber having a relatively small stationary top opening, a movable cover for said top opening, a shaft mounted axially of said refrigerated chamber, a circular upper rack rotatably mounted on said shaft and subdivided into a plurality of open top compartments at least one of which is also open at its bottom, said upper rack having means for selectively centering its compartments in vertical registry with said stationary top opening, means including a series of stationary vertically extending blades spaced circumferentially of the outer side of said upper rack for removing portions of the frost formations building up on the adjacent surface of said refrigerated chamber as the same is being rotated therein, a circular lower rack rotatably mounted on said shaft and subdivided into a plurality of compartments, said lower rack having means for selectively centering its compartments in vertical registry with the opening through the upper rack when the latter is in registry with said top opening, means including a series of stationary vertically extending blades spaced circumferentially of the outer side of said lower rack for removing portions of the frost formations building up on the adjacent surface of said refrigerated chamber as the same is being rotated therein, and a second series of stationary blades radially mounted on the bottom of said lower rack for removing frost formations from the adjacent bottom surface of said refrigerating chamber as the same is being rotated therein.

(To Be Continued)

CLASSIFIED ADVERTISING

RATES for "Positions Wanted" $2.50 per insertion. Limit 50 words.

RATES for all other classications $5.00 per insertion. Limit 50 words.

ADVERTISEMENTS set in usual classified style. Box addresses count as five words, other addresses by actual word count.

POSITIONS WANTED

SALES & APPLICATION engineer, 40. Excellent for manufacturer or dealer. Background covers supervision of sales, service, and installation of commercial refrigeration, also manufacturer's representative. Your request will bring complete resume of experience and ability. JOHN IRWIN, 1812 Linden Ave., Baltimore 17, Md.

MANUFACTURERS REPRESENTATIVE contacting Illinois sales and service organizations desires additional lines, condensing units, unit coolers, coils, commercial refrigerators, freezers, etc. Commission only. Interview arranged at manufacturers convenience and location. Proposal, literature, and price lists forward to BOX 2196, Air Conditioning & Refrigeration News.

VETERAN OF World War II, married, age 35. Will consider steady employment in either factory or field work in any eastern state. Considerable experience in electric refrigeration. Experience also in other mechanical fields. BOX 2198, Air Conditioning & Refrigeration News.

YOUNG MAN 34, married, desires position as instructor in trade or technical school. Three years experience teaching domestic, commercial, and air conditioning theory and laboratory; eleven years field experience. Will consider employment in South America for a responsible refrigeration or air conditioning firm. BOX 2206, Air Conditioning & Refrigeration News.

POSITIONS AVAILABLE

NEEDED AT once—qualified, experienced refrigeration mechanic or engineer. Must be able to service and install ammonia and "Freon" commercial equipment. Must be in position to travel. Good salary and road expense. Rush reference to: CALVIN BRUCE REFRIGERATION, Box 137, Brookings, So. Dak.

REFRIGERATION ENGINEER wanted by major manufacturer in consumer durable goods field. Background featuring knowledge of modern product design and production methods necessary. Salary commensurate with responsibilities. Submit complete resume. All replies confidential. BOX AC 1768 Equity, 113 W. 42nd St., N. Y. 18.

WANTED: SALES engineer. York Distributor for Westchester County, N. Y. has opening for sales and estimating engineer in air conditioning, commercial refrigeration. G & N REFRIGERATION CORP., 258 E. 3rd St., Mt. Vernon, N. Y.

WE ARE large distributors of commercial refrigeration and air conditioning equipment and require sales manager experienced in either line or both. Offer splendid opportunity. State previous experience and starting salary wanted. KUHR BROTHERS, Savannah, Ga.

SALES ENGINEER—$300 per month, plus commission, if you qualify. Only man with proven sales ability; complete refrigeration; air conditioning engineering, sales experience need reply. Knowledge of store-bar fixtures helpful. Must be able to figure-cost all jobs as well as sell them. REFRIGERATION SALES CO., 5638 Hohman Ave., Hammond, Ind. Sheffield-500.

SALES ENGINEER—G.E. commercial refrigeration distributor in northern New Jersey requires services of energetic application's engineer capable of taking full charge of our air conditioning and industrial refrigeration department. Must be experienced. College education preferred. State all qualifications including starting salary. BOX 2200, Air Conditioning & Refrigeration News.

OPPORTUNITY — LEADING compressor manufacturer desires sales engineer for midwest territory. College graduate in engineering preferable but not necessary. Age limit 31. Adequate salary and expenses for probably the first year, incentive arrangement thereafter. Write giving full details and appointment will be arranged. BOX 2202, Air Conditioning & Refrigeration News.

ENGINEER—YOUNG mechanical engineering graduate with some refrigeration experience preferable but not necessary, for eastern compressor manufacturer as assistant to chief engineer. Adequate compensation and unlimited opportunity for right man. Will be necessary to live in east. Write full details. BOX 2203, Air Conditioning & Refrigeration News.

NEW YORK City air conditioning installation contractor desires experienced engineer able to handle all phases of comfort conditioning, from initial survey to supervision. Practical "know-how" more important than degree. Firm medium sized, long and well established, growing steadily. Real opportunity. Give full particulars in confidence. BOX 2205, Air Conditioning & Refrigeration News.

EQUIPMENT FOR SALE

IMMEDIATE DELIVERY—no waiting. Meat and delicatessen cases. Single duty and double duty. 8, 10, 12 ft. Dairy boxes, 7, 8, 10 ft. All complete with coils and fluorescent lighting. Franchises open throughout U. S. COMPLETE REFRIGERATORS SUPPLY, 92 7th Ave., New York City, N. Y. #WA-98190.

SECTIONAL WALK-IN coolers built to your specifications. Chrome hardware. Oak trim door. Fir front. Seasoned spruce. Metal saddle. Fibreglass insulation. Week delivery. Quantity discount. Buy direct from manufacturer and save. Send us your requirements. COOLER KING MFG. CO. (Wholesale Only), 8795 17 Ave., Brooklyn 14, N. Y.

IMMEDIATE DELIVERY—one new copper evaporative condenser coil, 4½ tons capacity—Governair Model No. EC 113F. Crated $529. F. P. DICESARE CO., Phone 2-9081, 142 South Fifth St., Steubenville, Ohio.

FOR SALE: 1,000 new flip covers and frame assemblies for freezers and ice cream cabinets. Two popular sizes. ¼ to 2 hp. new and remanufactured condensing units, also new aluminum ice cube trays. EDISON COOLING CORP., 310 E. 149th St., Bronx 51 ,N. Y.

IMMEDIATE DELIVERY freezers open and closed glass top, stainless steel top, canopy type, 20-44 cu. ft. Florist Dairy boxes, bottle coolers, double duty display cases. Ice cream cabinets, storage boxes. wood-metal. 4-6 can milk coolers, reach-in refrigerators. Water Fountains. FRIGITEMP CORP., 931 Bergen St., Brooklyn 16, N. Y. MA 2-9093.

REACH-IN REFRIGERATORS, dry beverage coolers, home and farm freezers, ice cream cabinets, open type frozen food cases with superstructure. All equipment with and without units. Immediate delivery, attractively priced, exclusive distributorships available. GENERAL REFRIGERATORS CORP., 678 Broadway, New York (12) ST 9-1222.

CONDENSING UNITS, new, immediate delivery. ½ hp., air cooled, complete with motor and control. Also, limited stock, ¾ hp., 1 hp., and 1½ hp., new motors, heavy duty, repulsion induction type. KOLD DRAFT COLUMBUS, 27 N. Nelson Road, Columbus 3, Ohio. Evergreen 0220.

FOR SALE—new in stock for immediate shipment. 1500 watt and 5000 watt, 115 volt, A.C. Single phase. Fully-automatic, 4 cylinder water cooler Kohler plants, complete with fuel tank, fittings and starting battery. Ideal stand-by for food preservation. Write or wire. E. E. PAULLY & CO., dealers, Cheboygan, Mich.

COMPRESSORS AND PARTS rebuilding—Compressors, float valves, water valves, low pressure controls, evaporators, water cooled condensers, condensing units and many other items replaced from our large stocks, or repaired upon receipt of your defective material. Send for our catalog-prices listed. REFRIGERATION MAINTENANCE CORP., 321 E. Grand Ave., Chicago, Ill.

FREEZER PLATES—all new Stangard-Dickerson—14 size 21 x 72, $26.25 each, 62 size 21 x 60—$22.97 each, 33 size 21 x 48—$19.39 each, 2 size 24 x 72—$28.95 each, 9 size 24 x 60—$24.75 each, 8 size 24 x 48—$21.29 each, F.O.B. Dayton. REFRIGERATION SERVICE SHOP, INC., Monument and Stratford Aves., Dayton 2, Ohio.

NEW MOTORS—ten 3 hp—220-440 volt—3 phase— 60 cycle—A.C. Electric compressor duty motors. All new, Wagner, Century. $95 each. F.O.B. Dayton. REFRIGERATION SERVICE SHOP, INC., Monument and Stratford Aves., Dayton 2, Ohio.

AIR CORPS oxygen cylinders—can be used as portable four pound "Freon" drums. Bursting pressure 2200 lbs. Stainless steel. 5 in. diameter by 8 in. long. Light, convenient. $1.25 each plus postage, while balance of 200 last. Order immediately. D. L. ROUSEY, 5545 North Magnolia Ave., Chicago 40, Ill.

FLOAT REPLACEMENTS. For replacing defective high side floats on all household units. Regular charging connection, capillary tube setup, internal strainer and exact mounting plate. Part #2000-Westinghouse (4 hole plate), and #2010 (3 hole plate); Part #2020-Gibson; Part #2030-General Electric (DR-1 & DR-2). Part #2040-For general replacement (undrilled plate). $6.75 each. SEALED UNIT PARTS CO., 3097 Third Ave., New York 56.

SEALED CROSLEY TERMINALS. Installed from the outside in a few minutes without opening the compressor. Corrects leaky terminals on all Crosley "F-12" units. Set of three $6.75 (Part No. 1020). Installation tool $1.65. Immediate delivery. Money-back guarantee. SEALED UNIT PARTS CO., 3097 Third Ave., New York 56, N. Y.

FRIGIDAIRE METER-MISER Terminals. Installed from the inside. Fits compressors with bottom-mounted terminals. (Part No. 1060.) Set of three $2.85. WESTINGHOUSE TERMINALS. Installed from the inside. (Part No. 1030.) Set of three $2.85. SEALED UNIT PARTS CO., 3097 Third Ave., New York 56, N. Y.

NORGE CHECK VALVES. For open-type units. (Part No. 1040.) $2.55 each. SEALED NORGE terminal, packing washers. For repairing leaky terminals. Installed from the outside in a few minutes. (Part No. 1050.) Three sets (9 washers) $1.00. SEALED UNIT PARTS CO., 3097 Third Ave., New York 56, N. Y.

SEALED NORGE terminals. Complete assembly. Replaces shorted terminals Installed from inside. (Part No. 1100.) Set of three $2.85. Sealed Crosley terminals. Installed from inside. Part No. 1070 for SO2 models. Part No. 1080 for "F-12" models. Part No. 1090 for "F-21" models. Set of three $2.85. SEALED UNIT PARTS CO., 3097 Third Ave., New York 56, N. Y.

UNDERBAR WORKBOARDS, cocktail stations, dry beverage coolers, and beer dispensers designed for water bath, circulating air, Temprite tanks and Penflo cooling systems, for immediate delivery, by one of the oldest bar interior equipment manufacturers in the East. SUPREME METAL FABRICATORS, INC., 27 Rodney St., Brooklyn 11, N. Y.

SECTIONAL WALK-IN coolers made of plastic plywood 4 in. and 6 in. of Fiberglas insulation. 8 ft. x 8 ft. x 7 ft. high. Write for prices and literature. ZERO REFRIGERATION CO., Saukville, Wis.

NEW ALL-STEEL sectional walk-in coolers available for immediate delivery at attractive prices. Write for specifications and quotations. BOX 2188, Air Conditioning & Refrigeration News.

AIRFLOW CONDENSING units—½-hp. twin-cylinder, 580 r.p.m., 4020 B.t.u. at 20 degrees suction and 90 degrees ambient temperature—with back-pressure control, flywheel and fan-belts. Price, less motor, $88 in lots of 6 or more, f.o.b. N.Y.C. BOX 2189, Air Conditioning & Refrigeration News.

BARGAIN 50 brand new 12½-cu. ft. farm and home freezers complete with valves, control and less condensing units. All in original crates at $207.50 each. Reason for sale, must reduce inventory. Will sell all or part. Write or wire BOX 2193, Air Conditioning & Refrigeration News.

FOR SALE 7500 1/250th hp. 15000 R.P.M. 30 Watt ⅛ in. shaft shaded pole A.C. Motors in black round steel case $2.89 each. Net F.O.B. Whse. BOX 2197, Air Conditioning & Refrigeration News.

½—1—1½—2 hp. condensing units complete with single phase motors. Meat and bone cutters complete with both 1 and 1½ hp. motors. BOX 2204, Air Conditioning & Refrigeration News.

FRANCHISES AVAILABLE

AGENTS WANTED throughout the United States and Foreign Countries to sell nationally advertised line of condensing units. State territory desired and other lines handled or present connections. Our present employes and agents know of this advertisement. Answers will be held in utmost confidence. BOX 2186, Air Conditioning & Refrigeration News.

BUSINESS OPPORTUNITIES

WELL ESTABLISHED refrigeration, air conditioning, heating and radio business in southeast Missouri. Franchises both domestic dealership and commercial distributorship. Plenty of sales and service; or will sell separately from rest of business, domestic refrigeration and appliance line, and radio shop. BOX 2199, Air Conditioning & Refrigeration News.

WORLD TRADE NEWS

'Largest Latin American Firm' Begins Manufacture of Appliances In Mexico

PITTSBURGH—Limited production of electrical equipment ranging from motors and generators to household appliances was scheduled to begin by the end of 1946 at the plant of Industria Electrica de Mexico, S. A., a new $15,000,000 company said to be the largest of its kind in Latin America.

Formed as the result of technical and financial cooperation between American and Mexican resources, the concern will manufacture the products under exclusive contract with Westinghouse Electric Corp., according to a Westinghouse announcement.

Site of the new plant is a 190-acre tract located north of Mexico City. Original buildings, which will contain an area of approximately 650,000 sq. ft., are designed to permit expansion of the plant to double its present size.

"Production according to American methods and standards is made possible by a long term license agreement with Westinghouse providing for all technical phases of modern plant layout, operation, and product design," the announcement said.

"The Mexican company will be furnished with complete specifications and drawings for all products manufactured, as well as information on production methods.

"The technical agreement also includes training of Mexican personnel in manufacturing and business procedures. Over a number of years selected groups of trainees are to be brought to the United States for practical training in Westinghouse plants. These men will return to form the nucleus of a technical and supervisory staff for the company, which is expected eventually to provide work for approximately 2,000 employes."

Because of the magnitude of the enterprise, some time will be required to achieve full-scale operation. During this period, volume will be increased by the considerable use of products and sub-assemblies from Westinghouse plants, the corporation stated.

Preliminary surveys by Inversiones Latinas, an investment company interested in Mexico, are said to have indicated a large and steady market for electrical equipment in Mexico. Immediate demand for the new company's products is expected to be about $10,000,000, with a big increase looked for by 1951.

"These figures indicate that Industria Electrica will take an immediate place in the Mexican economy," Westinghouse observed. "Although 70% of its 20,000,000 population is still agricultural, Mexico has developed a great demand for industrial products during recent years."

Products slated for manufacture include home appliances, such basic equipment as transformers, circuit breakers, panelboards, and distribution panels, motors, and controls, and electrical household materials of various kinds.

1st British Home Freezer Has 'Domestic' Section

LONDON — A two-door home freezer containing both frozen food and "domestic" compartments is now being produced here by Messrs. R. B. C. Ldt. It is thought to be the first frozen food cabinet designed and made in Britain.

The 9½-cu. ft. frozen food compartment is divided into four sections, two for quick freezing, and two for storage. A temperature of -30° F. can be obtained in the quick freeze sections, it is claimed.

Capacity of the domestic compartment is given as approximately 2 cu. ft. and the temperature range as 28 to 32° F. This part is designed to hold such foodstuffs as milk, butter, eggs, and cheese.

Considered suitable for the processing of fruit, vegetables, and meat, the freezer is said to have a capacity of 506 lbs. of meat or similar quantities of other commodities. The freezing section is equipped with four vacuum plates and is operated by a ⅓-hp. condensing unit.

The manufacturer is said to be considering incorporation of a "vacuumed condition" of the cabinet interior to give ultra-rapid freezing, decreased humidity of the cabinet by exhaustion of air, and shorter running of the unit. With this arrangement, the exhauster would operate only when the unit cuts in, if the vacuum control switch allows, or when the vacuum is broken by insertion of new commodities to be frozen.

Paley Names Export Agent

BROOKLYN — Appointment of American Refrigeration Export Co., of New York City, as its exclusive agent for export sales was announced recently by Paley Mfg. Corp., producer of self-service frosted food cabinets. Paley said plans are being made to promote world-wide sales of the cabinets.

Jordon Brochure Aimed At Latin American Trade

CLEVELAND—Release of a brochure on Jordon Refrigerator Co. products printed in Spanish and Portuguese for the Latin American trade was announced recently by Maurice Zatko, head of the firm's export department.

In laying emphasis on its export trade, particularly to Latin America and Canada, the company expects to publish a catalog in Spanish and Portuguese, Mr. Zatko asserted.

He added that the brochure just released is the first of a series of foreign language brochures that Jordon intends to print.

Jordon is already making shipments of refrigeration units to Venezuela, Brazil, Colombia, Mexico, Puerto Rico, and Canada, according to Mr. Zatko. The firm is receiving inquiries about its products from India and Europe, he said.

The refrigeration export business will get a great impetus as soon as import regulations are lifted, Mr. Zatko believes.

Domestic-Box Exports Top '36-'38 Average

WASHINGTON, D. C.—August was the first postwar month in which exports of household refrigerators surpassed the 1936-38 monthly average, according to foreign trade statistics reported by the Office of International Trade, U. S. Department of Commerce.

During that month, 14,226 domestic refrigerators, valued at $1,663,000, were shipped abroad. This compares with the prewar monthly average of 13,046 units having a total value of $980,000.

Other third quarter statistics on total quantity and value are: July, 7,954, $911,000; September, 5,035, $617,000.

After passing the 1936-38 monthly average of $1,604,000 in June with a total value of $1,912,000, exports of "electric refrigerators and parts" dropped to $1,715,000 in July but rose to $2,833,000 in August. September marked another recession with $1,236,000.

Total values of exports of "electrical appliances (household and domestic, except lamps)" were given as follows: July, $942,000; August, $1,248,000; September, $1,012,000. The prewar average was $466,000.

How Many Went Abroad and Where They Went

'45-'46 Refrigerator, Appliance Export Totals

(Statistics assembled by the Special Programs Division, Areas Branch, Office of International Trade, Department of Commerce, from the monthly foreign-trade reports of Bureau of the Census.)

Exports of Leading Commodities and Commodity-Groups: Total and Cash; and Percentage of Lend-Lease and UNRRA in Total

(Value in millions and tenths of millions of dollars. Total exports include lend-lease, UNRRA, and cash exports. Lend-lease figures after the close of the war in September 1945 covers supplies which recipient nations arranged to finance.)

	Quantity					Value				
	1936-38 Quarterly Average	July-Sept. 1945	Oct.-Dec. 1945	Jan.-Mar. 1946	Apr.-June 1946	1936-38 Quarterly Average	July-Sept. 1945	Oct.-Dec. 1945	Jan.-Mar. 1946	Apr.-June 1946
Electric Refrigerators and Parts	....	....	....	....	....	4.8	1.0	2.1	3.8	4.5
Household Refrigerators, number	39,138	2,461	3,243	13,512	17,816	2.9	.1	.3	1.4	1.9
Electrical Appliances:										
Household & domestic, except lamps	....	....	....	....	....	1.4	.4	.8	1.5	2.3

	Lend-lease as percent of Total Value		UNRRA as percent of Total Value	
	July-Sept. 1945	Apr.-June 1946	July-Sept. 1945	Apr.-June 1946
Electric Refrigerators and Parts	1.7	.2	....	.8
Household Refrigerators	(y)	(y)	....	....
Electrical Appliances:				
Household & domestic, except lamps	3.7	.2	....	(y)

(y) Less than one-tenth of 1 percent.

Exports* of Selected Commodities to Leading Countries and Areas

(Millions and tenths of millions of dollars)

Commodity Consumer Durable Goods	Canada	American Republics	United Kingdom	Continental Europe†	U.S.S.R.	Far East	Other	Total
Household Refrigerators:								
1938 Quarterly Average	0.2	0.7	0.2	0.4	(x)	0.4	0.7	2.7
Oct.-Dec. 1945	(x)	.2	....	(x)	....	(x)	(x)	.3
Apr.-June 1946	.2	1.0	(x)	.1	....	.1	.5	1.9
Electrical Appliances:								
1938 Quarterly Average	.4	.3	.3	.2	(x)	.2	.3	1.6
Oct.-Dec. 1945	.4	.2	(x)	(x)	(x)	(x)	.1	.8
Apr.-June 1946	.7	1.0	(x)	(x)	(x)	.3	.3	2.3

(x) Less than $50,000.
* Exports of United States Merchandise.
† Continental Europe Excluding U.S.S.R.

Heating, Ventilating Show Opens Jan. 27

(Concluded from Page 1, Column 5)

the ASHVE and the warm air group. Among the events scheduled for ASHVE is the dedication of the society's new research laboratory, located at 7218 Euclid Ave. here. Opening session of the annual meeting Monday morning, Jan. 27, will be held at the laboratory for the dedication ceremonies and regular business, along with the presentation of one technical paper, and announcement of election results.

Other technical sessions will be held Tuesday morning and afternoon, Jan. 28, Wednesday morning, Jan. 29, and Thursday morning, Jan. 30. These sessions will be held in the Hotel Statler. On Thursday afternoon the ASHVE will hold a joint meeting with the National Warm Air Heating & Air Conditioning Association to hear two technical papers.

Social events of the week will include entertainment for ASHVE members and guests Monday evening at the Statler, a social hour at 5:30 p.m. Tuesday, and the annual banquet in the Hotel Statler ballroom at 7 p.m. Wednesday. Numerous inspection trips are also planned.

The two-day convention of the National Warm Air Heating & Air Conditioning Association at the Hotel Cleveland will feature 13 addresses on all phases of the members' operations, in addition to the two technical papers to be presented at the joint meeting with ASHVE. Besides discussions on the technical side of the business, members will hear discussions on sales promotion programs.

Complete programs for both the ASHVE and warm air group's conventions follow:

ASHVE Program

Sunday, Jan. 26

10 a.m.—Committee meetings.
1 p.m.—Registration (Hotel Statler).
1:30 p.m.—Council meeting.
2 p.m.—Committee meetings.

Monday, Jan. 27

8:30 a.m.—Registration (Hotel Statler).
10 a.m.—Opening session (Research Laboratory). Dedication of Research Laboratory; reports of officers.

"Air Flow into Suction Openings," by A. D. Brandt and R. J. Stoffy.

Reports of committees; report of tellers of election.

12 Noon—Research luncheon (Quad Hall Restaurant, 7500 Euclid Ave.).

12:45 p.m.—Inspection trips: 1:15 p.m.—visit to Nela Park Lighting Institute; 3:45 p.m.—visit to AGA Laboratory.

2 p.m.—Opening of exposition (Lakeside Hall).

2:30 p.m.—Chapter delegates meeting (Research Laboratory).

9: 30 p.m.—Operation Relaxation (Hotel Statler Ballroom). Informal musical and comedy program with one act play by Chagrin Valley Little Theater.

Tuesday, Jan. 28

8:30 a.m.—Registration (Hotel Statler).
9:30 a.m.—Technical session (Hotel Statler, Grand Ballroom).

"The Effect of Moisture Content on the Diffusion of Odors in Air," by Richard L. Kuehner.

"Dehumidification—Methods and Applications," by John Everetts, Jr.

"Rating Dynamic Dehumidification Equipment," by E. R. Queer and E. R. McLaughlin.

2 p.m.—Panel and radiant heating forum.
5:30 p.m.—Social hour (Hotel Statler, Euclid Room).
6:30 p.m.—Past presidents' dinner (Hotel Statler, Tavern Room).

Wednesday, Jan. 29

8:30 a.m.—Registration (Hotel Statler).
9:30 a.m.—Technical session (Hotel Statler, Grand Ballroom).

"Practical Considerations in Determining Human Tolerance to Heat," by Willard Machle, M. D.

"Methods Used in Determining Health Hazards Arising from the Inhalation of Various Chemicals," by F. F. Heyroth.

"Minimum Replenishment of Air for Living Spaces Under Conditions of Mechanical Cooling," by W. V. Consolazio.

12:45 p.m.—Inspection trip: visit to laboratory of National Advisory Committee for Aeronautics.

2 p.m.—Chapter delegates meeting (Hotel Statler, Lattice Room).

7 p.m.—Annual banquet (Hotel Statler Ballroom). Toastmaster: L. T. Avery; presentation of past president's emblem.

Thursday, Jan. 30

9:30 a.m.—Technical session (Hotel Statler, Euclid Ballroom).

"Response and Lag in the Control of Panel Heating Systems," by F. W. Hutchinson.

Unfinished business; new business; installation of officers.

2:30 p.m.—Joint session with National Warm Air Heating and Air Conditioning Association.

"Proposed Design Procedure for Large, Mechanical Warm Air Heating Systems," by Prof. S. Konzo.

"Bacterial Air Sampling," by Matthew Luckiesh and A. H. Taylor.

4 p.m.—Council meeting.

National Warm Air Heating and Air Conditioning Association Program

Wednesday, Jan. 29

9. a.m.—Registration (Hotel Cleveland).
10 a.m.—"On The Threshold of Opportunity," Frank E. Mehrings, president.
10:30 a.m.—"Foreman . . . Management. Team Mates or Bargaining Units." H. J. Post, The National Association of Foreman.
11 a.m.—"Our New Research Residence," Frank L. Meyers, chairman, research advisory committee.
11:15 a.m.—"What The Indoor Comfort Program Means To Dealers," Hugh Thompson, chairman, dealers committee.
11:30 a.m.—"What The Association Is Doing For Wholesalers and Distributors." A. M. Vorys, chairman, jobbers committee.
11:45 a.m.—Election of officers and members of the board of directors.
12:30 p.m.—Luncheon. Guest speaker: Allen W. Rucker, president, Tool Owners Union.
2:15 p.m.—"Results of Publicity, Merchandising and Educational Activities," J. R. Scott, chairman, publicity and merchandising committee.

"Publicity and Promotion," E. R. Preble, vice president, Griswold-Eshleman Co.

"Demonstration of Indoor Comfort Conferences for Dealers," E. L. Sylvester, vice president, Florez, Inc.

"How To Plan For Indoor Comfort Conferences," G. A. Voorhees, application engineering director.

Summarization by F. E. Mehrings, president; J. R. Scott, chairman.

Thursday, Jan. 30

9:30 a.m.—"New Warm Air Research Residence," R. W. Roose, special research assistant, University of Illinois.

10 a.m.—"Furnace Blower Research, A New Investigation," N. A. Buckley, special research assistant, University of Illinois.

10:30 a.m.—"Resistance of Branch Take-Off Fittings in Extended Plenum," S. Konzo," special research professor University of Illinois.

11:15 a.m.—Committee reports: F. L. Meyers, chairman, research advisory committee; W. D. Redrup, chairman, installation codes committee; Prof. L. G. Miller, chairman, technical education committee; Guy A. Voorhees, application engineering director.

2:30 p.m.—Joint meeting with ASHVE.